

# Lely Luna

## Rotary Cow Brush



## Installation and Operator Manual

EN-US – English Original

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## List of included Amendments

Issue Date (yy/mm)	Revision	Chapter(s)	Remarks
2018/06	A		Initial issue.
2018/09	B		115V machine added.

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# Preface

## Manual Contents

This manual contains the information for the correct installation, setup and maintenance of the Luna Rotary Cow Brush. The information in this manual is for operators and technicians:

- The operator uses the information to clean the machine or to replace the brush.
- The technician uses the information to install and set up the machine.



Study and understand this information thoroughly before you install or do maintenance on the machine. Failure to do so could result in damage to equipment or personal injury (see on page 2-1). Please consult your local Lely service provider if you do not understand the information in this manual, or if you need additional information. Store this manual in a safe place for future reference.

All information in this manual has been compiled with care. Lely shall not be liable for errors or faults in this manual. The recommendations are meant to serve as guidelines. All instructions, pictures and specifications in this manual are based on the latest information that was available at the time of publication. Your machine may comprise improvements, features or options that are not covered in this manual.

## Applicabilty

The table below shows the machine type numbers for which this manual is applicable.

Model	Type number
Luna Rotary Cow Brush 230V.	5.4101.0061.1
Luna Rotary Cow Brush 115V.	5.4101.0071.1

## Standard Torque Loading of Parts

All the nuts, bolts and screws used on the machine are torque tightened to standard torque loadings applicable to the construction materials used.

If a part has a non-standard torque loading, it is specified in the applicable part of the manual.

## Registration

The type and serial number plate of the machine is attached to the side of the machine. Always include the type and serial number of your machine when you contact your local Lely service provider or when you order spare parts.

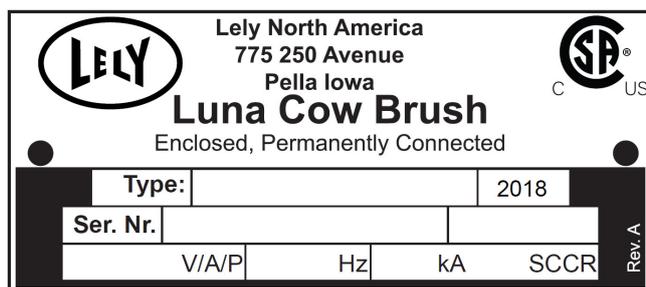
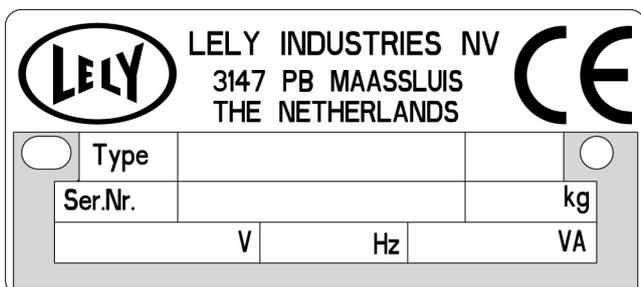


Figure 1. Type and serial number plate (depending on region)

We suggest that you complete the table below with the type and serial numbers of your machine. This makes sure that you can easily find the information.

Type number	
Serial number	

## Personnel Requirements



**Risk of accident from insufficiently qualified personnel.**  
**Unqualified personnel working on or in the danger zone of the machine can be the cause of serious injuries and considerable damage to material.**

- **All activities must only be carried out by qualified personnel.**
- **Keep unqualified personnel away from the danger zones.**
- **Only persons who can be expected to carry out their job reliably are authorized as personnel. Persons whose reactions are impaired, e.g. by drugs, alcohol medications are not authorized to work with the machine**



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# 1 The Lely Luna Rotary Cow Brush

## 1.1 Intended Use

The Luna enables the cows to scratch their head and back. The machine must only be used for short-haired cows older than one year. Long-haired cows can only use the machine if their hair and tail are trimmed regularly. Use the machine only inside the barn.

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## 2 Safety

This chapter contains safety instructions you must obey when you install, use or do maintenance on your Luna. It also explains the safety decals on the Luna.

### 2.1 Signal Icons

Note the use of the signal words DANGER, WARNING and CAUTION with the safety messages. The signal word for each message uses the following guidelines:



**Danger**  
Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

---



**Warning**  
*Indicates a hazardous situation which, if not avoided, could result in death or serious injury.*

---



**Caution**  
*Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.*

---



**Notice**  
Is used to address practices not related to physical injury e.g. property damage.

---



**Tip**  
Indicates information that may help the reader, but not hazard related.

---



## 2.2 Safety Instructions

YOU are responsible for the SAFE operation and maintenance of your machine. YOU must make sure that you and anyone else who is going to operate, maintain or work in the vicinity of the machine knows all the related SAFETY information in this manual.

YOU are the key to safety. Good safety practices protect you and the people around you. Make these practices a working part of your safety program. Make sure that EVERYONE who operates, maintains or works near the machine obeys the safety precautions. Do not risk injury or death by ignoring good safety practices.

- Owners must train operators before they operate the machine. This training must be repeated at least annually.
- The operator must read, understand and obey all safety and operating instructions in the manual.
- A person who has not read and understood all safety and operating instructions is not permitted to operate the machine.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment and persons.
- Only use approved spare parts and make sure that they are only installed by authorized technicians.

### 2.2.1 General Safety

- Read and understand this manual and all safety signs before you connect power supplies to operate, maintain or adjust the machine.
- Only trained persons are permitted to operate, maintain or adjust the machine.
- A first-aid kit must be available in or near the barn where the machine operates. Store in a highly visible place.
- Know the emergency medical center number for your area.
- When a part on the machine is broken or missing, take the machine out of operation. Make sure the part is repaired before you put the machine into operation again.
- Wear protective clothing (safety shoes).
- Review safety related requirements with all machine operators frequently (annually).
- Contact your nearest Lely service provider if you have any questions.

### 2.2.2 Electrical Safety

- Only an authorized electrician must install the electrical power supply for the machine.
- Replace damaged electrical lines, conduits, switches and components immediately.
- Make sure the electrical grounding of the electrical system and all parts of the machine meets the local rules and regulations.
- The machine must be connected to a socket with earth connection.
- The machine must be connected to the power net according to the local rules and regulations.

### 2.2.3 Operation Safety

- Read and understand this manual and all safety signs before you connect power supplies to operate, maintain or adjust the machine.
- Keep unauthorized persons, especially small children away from the machine at all times. Always accompany unauthorized persons when they enter the barn.
- Keep hands, feet, hair and clothing away from all moving parts.
- Always be alert of unexpected movement of the cow.
- Keep the machine and its immediate vicinity as clean and as dry as possible.
- Contact your nearest Lely service provider if you have any questions.

### 2.2.4 Installation Safety

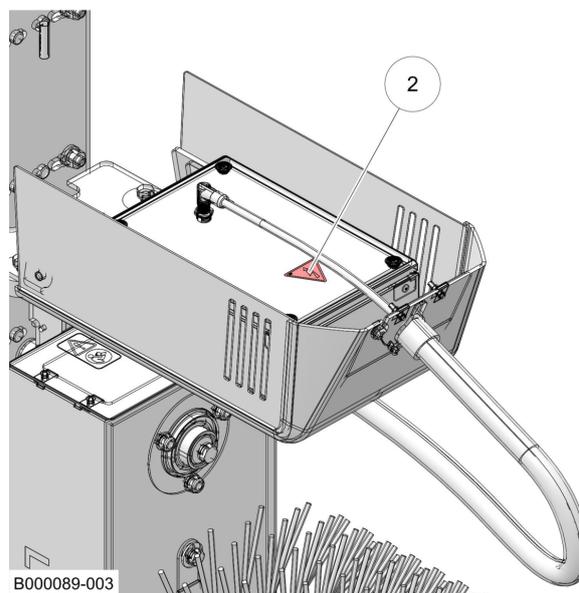
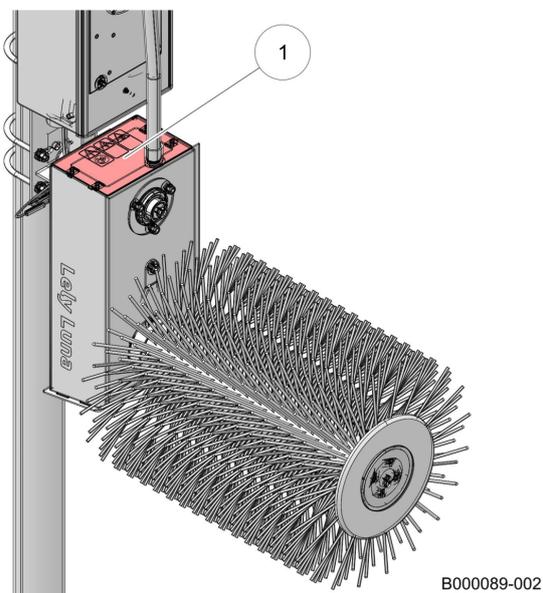
- Read and understand this manual and all safety signs before you connect power supplies to operate, maintain or adjust the machine.
- The machine has electric parts. Therefore it must be installed indoors. Installing it outdoors can lead to serious damage to the electrical components of the machine.
- Make sure the machine is installed correctly in the barn.
- Make sure the electrical power supply is correct before you connect the machine to it.
- Only a authorized electrician must install the electrical power supply for the machine.
- Make sure the electrical grounding of the electrical system and all parts of the machine meets the local rules and regulations.
- Always block the cow traffic when you work in the manure alley.

### 2.2.5 Maintenance Safety

- Read and understand this manual and all safety signs before you connect power supplies to operate, maintain or adjust the machine.
- Only trained technicians are permitted to do corrective maintenance on the machine.
- Always block the cow traffic when you work in the manure alley.
- Disconnect the electrical power supply before you clean or do maintenance on the machine.
- Install all covers after you finished maintenance.
- Do not clean the machine with a high pressure cleaner.
- Only clean the brush with water when it is removed from the machine.

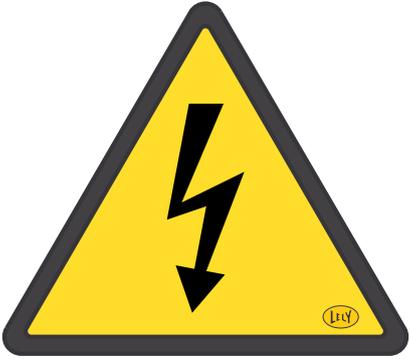
## 2.3 Safety Decals

### 2.3.1 Position of the Safety Decals



KEY: 1. General safety decal - 2. High voltage decal

### 2.3.2 Explanation of Safety Decals

No.	Decal	Explanation
1		<p><b>Warning</b></p> <p>Read and understand the manual before installing or using this machine (see Position of the Safety Decals on page 2-4).</p> <p>Failure to follow instructions could result in serious injury (see Position of the Safety Decals on page 2-4).</p> <p><b>Warning</b></p> <p>Rotating parts.</p> <p>Risk of personal injury.</p> <p>Keep hands, loose clothing and long hair away from moving parts during operation of the machine (see Position of the Safety Decals on page 2-4).</p>
2		<p><b>Danger</b></p> <p>Risk of electric shock (see Position of the Safety Decals on page 2-4).</p> <p>Risk of severe injury or death (see Position of the Safety Decals on page 2-4).</p> <p>Do not use a high pressure cleaner to clean the machine (see Position of the Safety Decals on page 2-4).</p>

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### 2.3.3 Installation of Safety Decals

1. Make sure that the installation surface is clean and dry.
2. Make sure that the temperature of the mounting surface is not less than 5 °C (41 °F).
3. Find the correct position for the decal before you remove the backing paper.
4. Remove a small part of the cover paper.
5. Put the decal in the correct position on the installation surface and carefully push the small part of exposed adhesive surface of the decal onto the installation surface.
6. Slowly remove the cover paper and attach the rest of the decal to the installation surface.
7. Puncture small air pockets in the decal with a pin and use the cover paper to smoothen the decal.



### **2.3.4 Maintenance of Safety Decals**

Safety decals show important and useful information that will help you to safely operate and maintain the machine.

Obey the instructions below to make sure that all the decals stay in the correct position and condition.

- Keep the safety decals clean and legible at all times. Clean the safety decals with soap and water. Do not use mineral spirits, abrasive cleaners or other similar agents that may damage the safety decals.
- Replace safety decals that are missing or that are illegible.
- Safety decals can be purchased from your local Lely service provider.

## 3 Specifications

### 3.1 Dimensions and Weight



The dimensions and weight include the bracket but exclude the installation parts and fasteners.

- Dimensions:
  - Width: 24 cm (9.45 in).
  - Height: 116.5 cm (45.87 in).
  - Depth: 91.4 cm (35.85 in).
- Weight:
  - Total weight: 58 kg (127.69 lb).
  - Box: 10 kg (22.05 lb).
  - Motor unit: 27 kg (59.53 lb).
  - Brush: 10 kg (22.05 lb).
  - Frame: 11 kg (24.25 lb).

For complete dimensions of the machine (see Dimensions on page 10-1).

### 3.2 General Specifications

- Power supply: 115V / 230V.
- Box: IP65.
- Maximum power consumption: 300 W.
- Power cable length: 2.5 m (8.2 ft).
- Shaft output: 180 W.
- Brush rotation speed: 30 rpm.

### 3.3 Noise Specification

- The maximum sound level pressure: <70 dB(A).

### 3.4 Operational Conditions

- Ambient temperature inside the barn: -10 to +40 °C (+14 to +104 °F).



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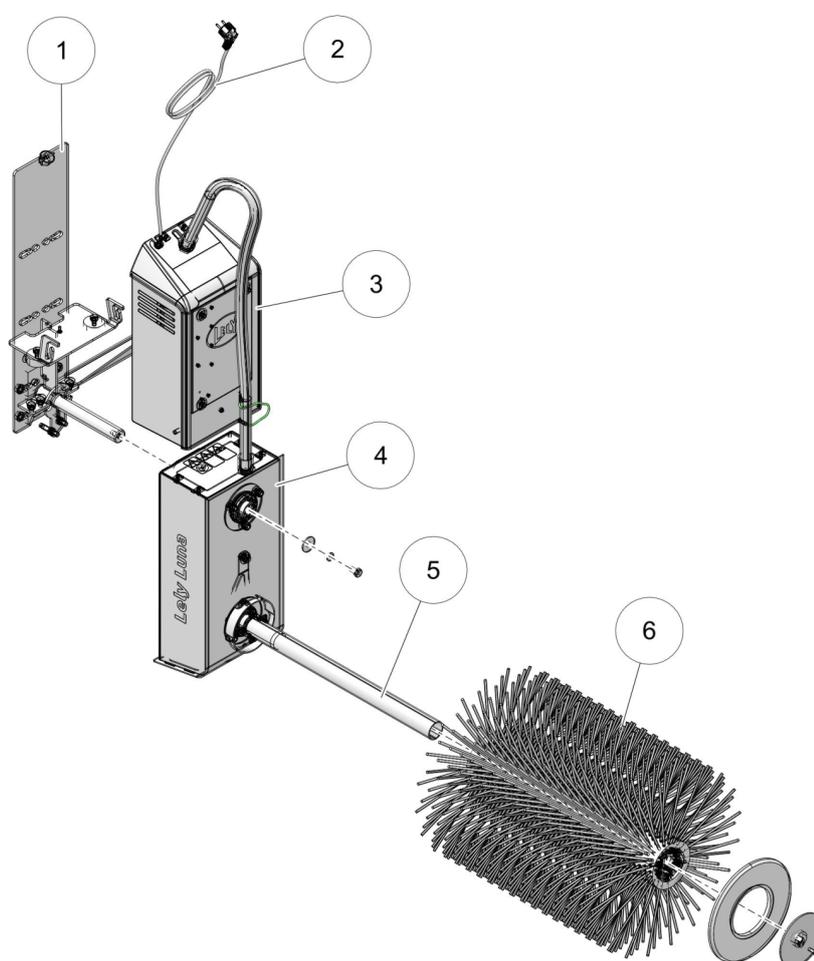
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## 4 Description and Operation

### 4.1 Component Description

The machine has the following parts (see figure 2 on page 4-1):

- Frame.
- Cover with box.
- Motor housing.
- Brush shaft.
- Brush.
- Power cable.



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Figure 2. Overview

KEY: 1. Frame - 2. Power cable (EU) - 3. Cover with box - 4. Motor housing - 5. Brush shaft - 6. Brush

## 4.2 Operation

When the machine is in rest, the machine is in a vertical position. When a cow moves the motor housing, the motor starts to rotate the brush (see figure 3 on page 4-2).

- Two inductive sensors monitor the movement of the brush and engage the motor. When the motor housing is back in the vertical position for 4 seconds, the motor stops.
- If the motor housing moves clockwise, the brush starts to rotate counterclockwise and vice versa.
- The torque on the brush is limited by the motor control.

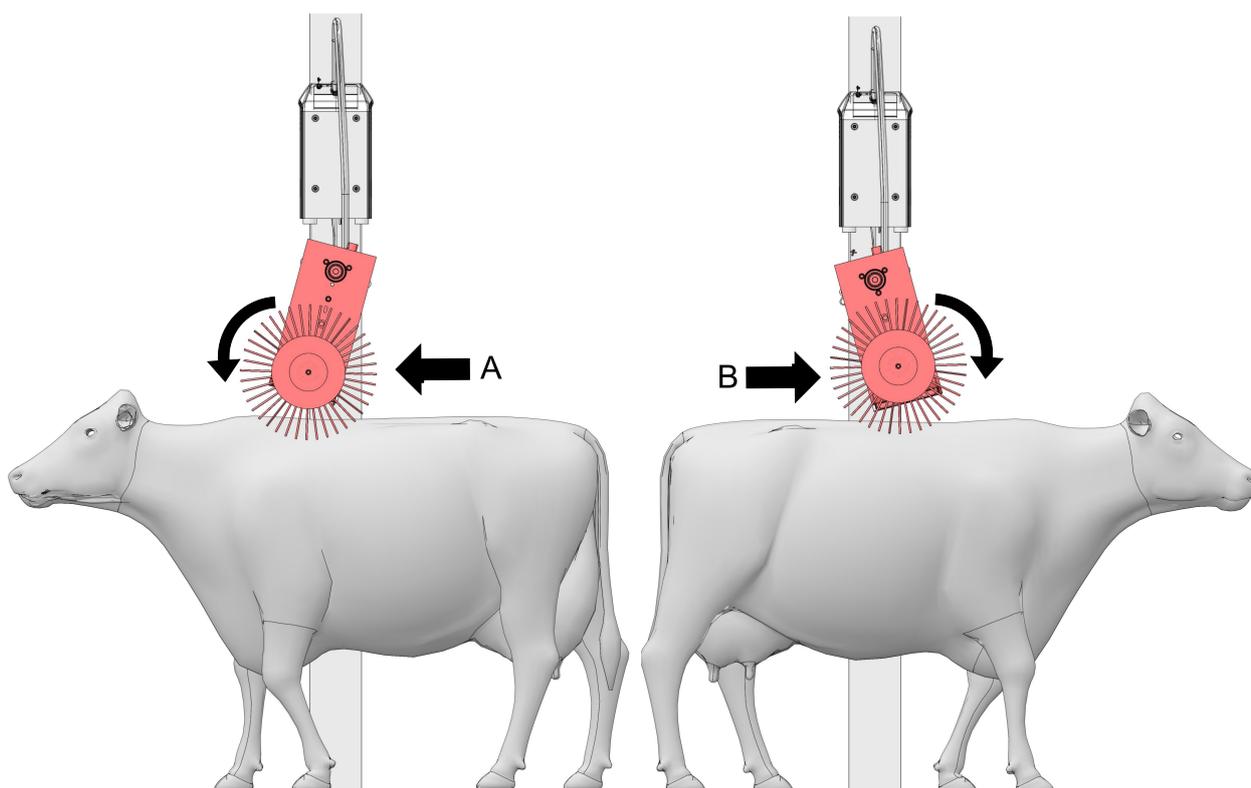


Figure 3. Motor housing movement

**KEY:**

- A: When the motor housing moves clockwise, the brush rotates counter clockwise  
 B: When the motor housing moves counterclockwise, the brush rotates clockwise

### 4.2.1 The Brush

Two colors are used for the hairs to provide the brush with a pattern. This enables visual confirmation when the brush rotates.

### 4.2.2 Cow Protection

The motor torque is always limited by the controller to avoid hurting the cow. If the torque rises to the maximum allowed value for 2 seconds, the controller will stop the motor for 20 seconds. This is designed to help the cow escape in case it's tail is caught in the brush. After 20 seconds in vertical position, the brush will work normally.

The brush has a free rotating axle when unpowered. This helps the cow to easily pull his tail from the brush when its blocked.

---

**NOTICE**

Make sure cows who use the machine have no loose neck straps, ropes and so on.

---

#### **4.2.3 Cow Hair Conditions**

To prevent injury of a cow, it is of the utmost importance you do not use the machine with long-haired cows and cows with a long-haired tail.

Trim the hair and the tail of the cow regularly.

1. Cut off the tail plume a few centimetres below the tail end.
2. Shave the tail above the remaining plume.



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## 5 Installation

### 5.1 Installation Possibilities



**Electrical hazard.**  
*For indoor use only. Do not install the machine exposed to weather elements.*

---



**Electrical hazard.**  
*The wall socket must be installed according to the local rules and regulations.*

---



**Electrical hazard.**  
*Install the wall socket on a minimum height of 2.3 m (90.6 in).*

---



---

#### NOTICE

Install the machine on a wall or pillar suitable to carry the load exerted by the weight of the machine and the cow. Lely does not recommend to install the machine on a hardboard or plasterboard.

---



Install the machine on a location where it does not disturb the cow traffic.

---

The installation process of the machine has the following sequence:

1. Determination of the installation height (see Determination of Installation Height on page 5-2).
2. Installation of the frame. The machine can be installed in three different positions:
  - On a wall (see Install the Frame on the Wall on page 5-4).
  - On a round pillar (see Install the Frame on a Round Pillar on page 5-6).
  - On a square pillar (see Install the Frame on a Square Pillar on page 5-11).

3. Installation of the motor housing (see Install the Motor Housing on page 5-14).
4. Installation of the box (see Install the Box on page 5-17).
5. Installation of the brush (see Install the Brush on page 5-25).
6. Connect the machine to the main electrical supply with the power cable (see Switch the Luna On or OFF on page 6-1).

---

**NOTICE**

Examine the tightening of all bolts, nuts and Allen keys, one week after the installation.

---

## 5.2 Determination of Installation Height

The installation height of the frame depends on the height of the cows that are using the machine.

- Use the shoulder height of the smallest cow to calculate the installation height (A) (see figure 4 on page 5-3).
- The installation height is shoulder height from smallest cow +40 cm (15.75 in):

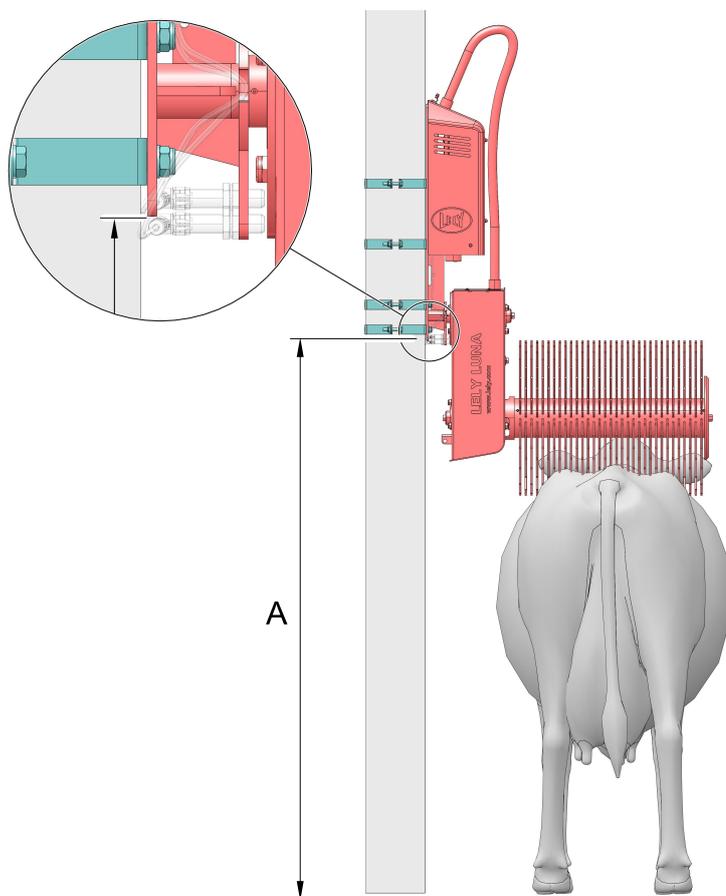


Figure 4. Frame installation height

KEY:  
A: Installation height

## 5.3 Installation of the Frame

### 5.3.1 Installation Conditions

#### NOTICE

Do not install the machine on a wall or pillar not suitable to carry the load exerted by the weight of the machine and the cow. Lely does not recommend to install the machine on a hardboard or plasterboard.

- A wall.
- A round pillar must have a diameter of 5 cm (2 in), 6.4 cm (2.5 in), 7.6 cm (3 in) or 10 cm (4 in).
- A square pillar must have a square profile of 15.2 cm (6 in) or 20.3 cm (8 in).

## 5.3.2 Install the Frame on the Wall

### Preparation

---



*Unexpected cow movement.  
Risk of being crushed or trampled.  
Block the cow traffic.*

---

1. Determine the correct installation height (see Determination of Installation Height on page 5-2).

### Installation

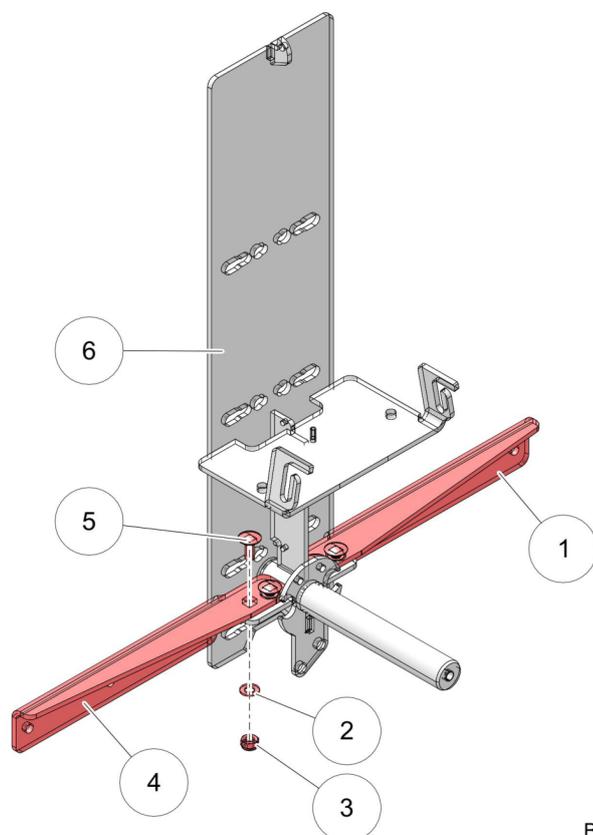
1. Install the plates (4, 1) on the frame (6) with the bolts (5), washers (2) and nuts (3) (see figure 5 on page 5-5).
  2. Mark the positions of the holes on the wall (see figure 6 on page 5-6).
  3. Drill the holes in the wall.
- 



*Potential falling object.  
Risk of personal injury.  
Always wear safety shoes and stand clear from the machine part during installation.*

---

4. Install the frame on the wall.



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Figure 5. Install the plates

Item	Qty.	Part no.	Technical data
1	1	5.4101.0289.0	Plate red
2	4	9.1048.0007*1	Washer A10,5 DIN 125-St
3	4	9.1030.0004*2	Nut M10 DIN985-8
4	1	5.4101.0288.0	Plate red
5	4	9.1058.0056.5	Coach bolt M10x25 DIN603-8.8
6	1	5.4101.0266Z0	Frame

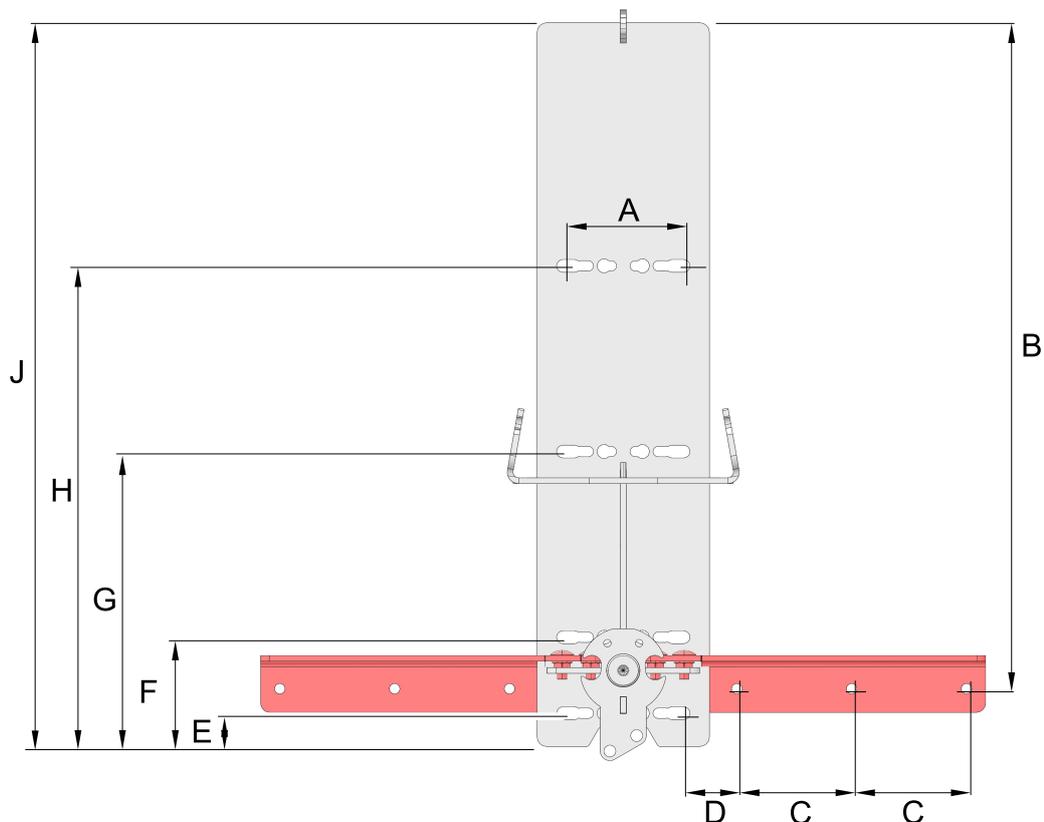


Figure 6. Hole pattern

KEY:  
 A: 12.6 cm (4.96 in)  
 B: 70.1 cm (27.6 in)  
 C: 12 cm (27.24 in)  
 D: 5.5 cm (2.19 in)  
 E: 3.5 cm (1.38 in)  
 F: 8 cm (3.15 in)  
 G: 31.05 cm (12.25 in)  
 H: 50.6 cm (19.92 in)  
 I: -  
 J: 76.2 cm (30 in)

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### 5.3.3 Install the Frame on a Round Pillar

#### Preparation



*Unexpected cow movement.  
 Risk of being crushed or trampled.  
 Block the cow traffic.*

1. Determine the correct installation height (see Determination of Installation Height on page 5-2).

## Installation

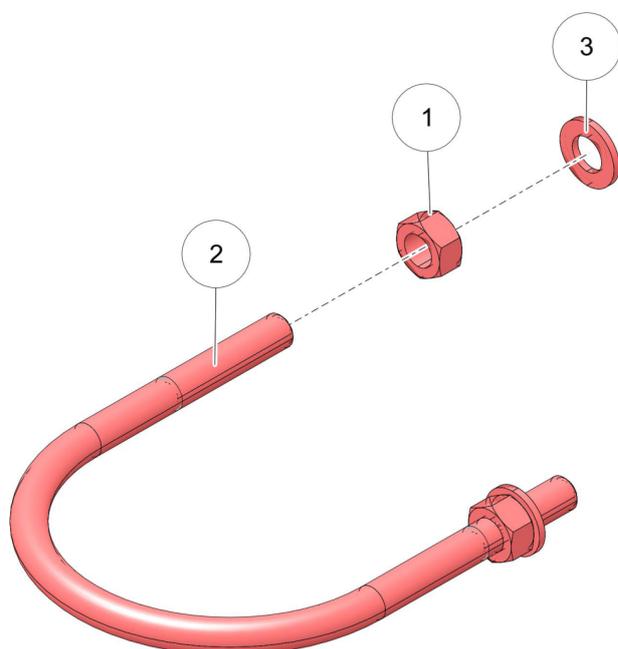
1. Use a pen to mark the installation height on the pillar (see figure 4 on page 5-3).
2. Install the nuts (1) and washers (3) on the tube clips (2) and turn the nuts (1) to the end of the thread (see figure 7 on page 5-8).
3. Install the filling pieces (1) on the frame (2) (see figure 8 on page 5-9).



*Potential falling object.  
Risk of personal injury.  
Always wear safety shoes and stand clear from the machine part during installation.*

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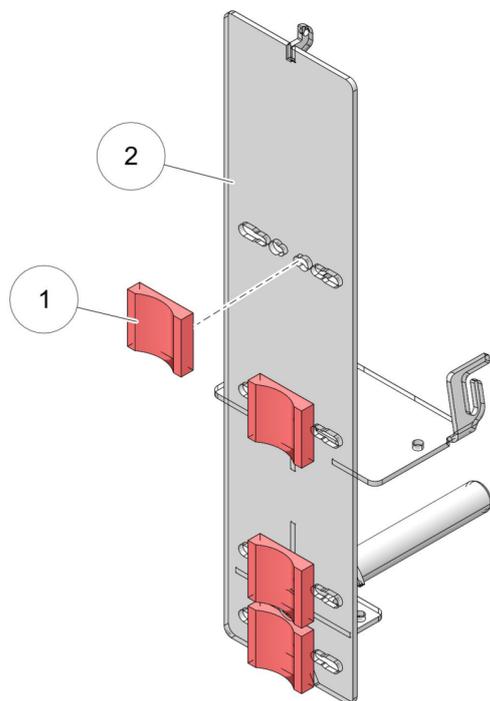
4. Adjust the top of the frame (3) to the mark on the pillar (see figure 9 on page 5-10).
5. Install the frame (3) with the tube clips (4), washers (2) and nuts (1).



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Figure 7. Install the nuts and washers on the tube clip

Item	Qty.	Part no.	Technical data
1	8	9.1029.0005*4	Nut M10 DIN934-8
	8	9.1029.0008*0	Nut M12 DIN934-8
2	4	9.1066.0047.25	Tube clip 2" x M10
	4	9.1066.0048.3	Tube clip 2.5" x M10
	4	9.1066.0049.4	Tube clip 3" x M12
	4	9.1066.0050.5	Tube clip 4" x M12
3	8	9.1048.0007*1	Washer A10,5 DIN 125-St
	8	9.1048.0012*6	Washer A13 DIN 125-St

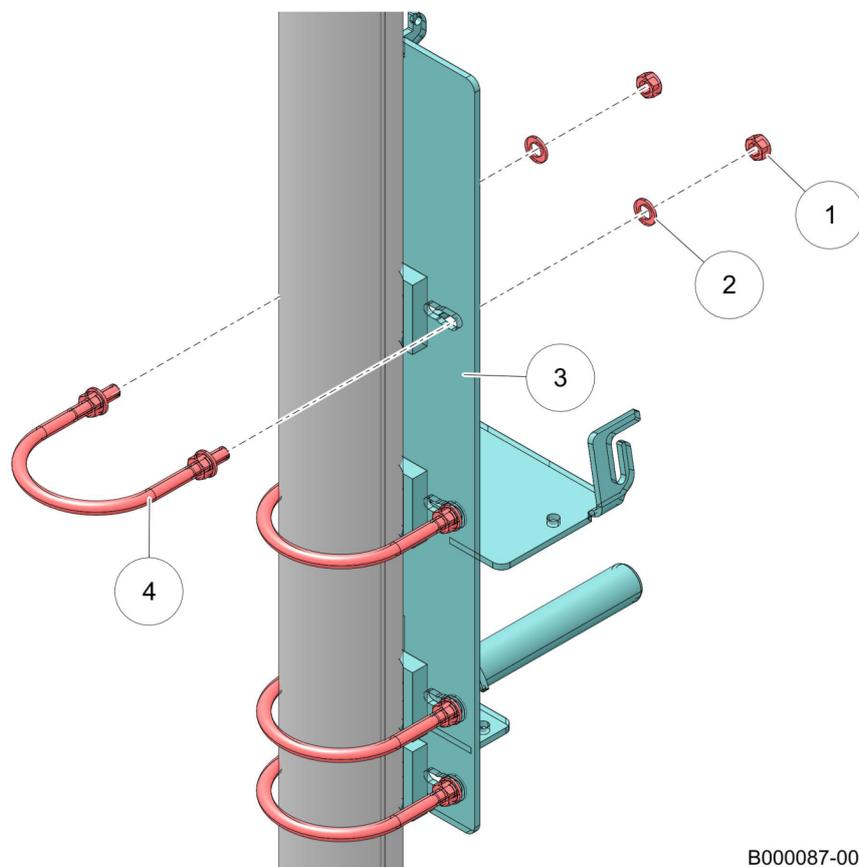


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Figure 8. Install the filling piece on the frame

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Item	Qty.	Part no.	Technical data
1	4	9.1066.0043.5	Filling piece 2" / 2.5", RUK 60, 3 PP
	4	9.1066.0045.0	Filling piece 3" / 4", RUK 88, 9 PP
2	1	5.4101.0266Z0	Frame



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Figure 9. Install the frame

Item	Qty.	Part no.	Technical data
1	8	9.1029.0005*4	Nut M10 DIN934-8
	8	9.1029.0008*0	Nut M12 DIN934-8
2	8	9.1048.0007*1	Washer A10,5 DIN 125-St
	8	9.1048.0012*6	Washer A13 DIN 125-St
3	1	5.4101.0266.0	Frame
4	4	9.1066.0047.25	Tube clip 2" x M10
	4	9.1048.0048.3	Tube clip 2.5" x M10
	4	9.1066.0049.4	Tube clip 3" x M12
	4	9.1066.0050.5	Tube clip 4" x M12

### 5.3.4 Install the Frame on a Square Pillar

#### Preparation

---



*Unexpected cow movement.  
Risk of being crushed or trampled.  
Block the cow traffic.*

---

1. Determine the correct installation height (see Determination of Installation Height on page 5-2).

#### Installation

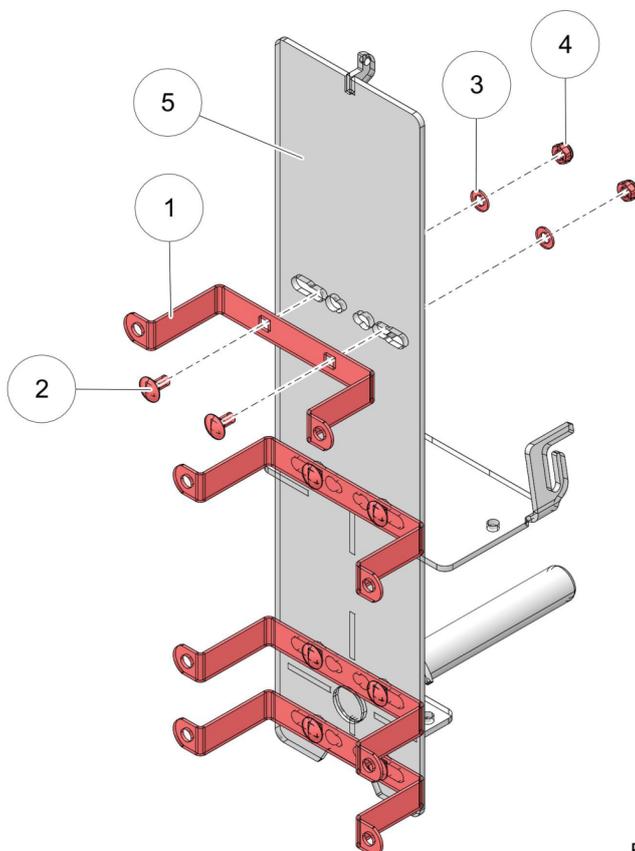
1. Use a pen to mark the installation height on the pillar (see figure 4 on page 5-3).
  2. Install the bracket (1) to the frame (5) with the bolts (2), washers (3) and nuts (4) (see figure 10 on page 5-12).
- 



*Potential falling object.  
Risk of personal injury.  
Always wear safety shoes and stand clear from the machine part during installation.*

---

3. Adjust the top of the frame (5) to the mark on the pillar (see figure 11 on page 5-13).
4. Install the frame (5) with the bolts (3), washers (2) brackets (1) and nuts (4).

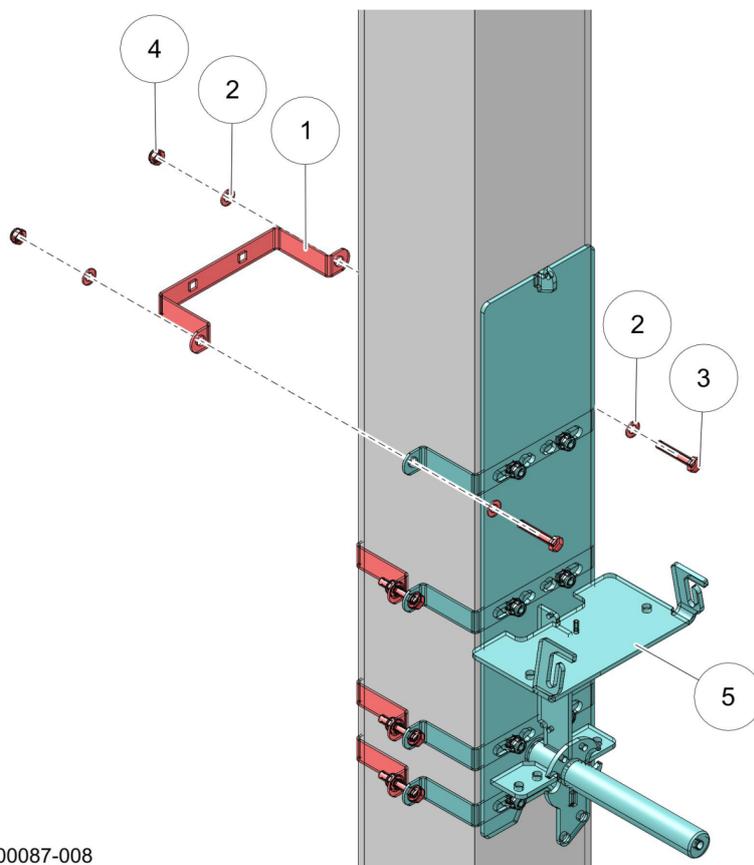


B000087-007

5.4101.8538.0 B

Figure 10. Install the bracket

Item	Qty.	Part no.	Technical data
1	4	5.4101.0286.0	Bracket (140 mm (5.52 in))
	4	5.4101.0285.0	Bracket (190 mm (7.48 in))
2	8	9.1058.0047.3	Coach bolt M10x20 DIN603-8.8
3	8	9.1048.0007*1	Washer A10,5 DIN 125-St
4	8	9.1030.0004*2	Nut M10 DIN985-8
5	1	5.4101.0266Z0	Frame



5.4101.8538.0 B

B000087-008

Figure 11. Install the frame

Item	Qty.	Part no.	Technical data
1	4	5.4101.0286.0	Bracket (140 mm (5.52 in))
	4	5.4101.0285.0	Bracket (190 mm (7.48 in))
2	16	9.1048.0007*1	Washer A10,5 DIN 125-St
3	8	9.1113.0037*1	Bolt M10x55 DIN933-8.8
4	8	9.1030.0004*2	Nut M10 DIN985-8
5	1	5.4101.0266Z0	Frame

## 5.4 Install the Motor Housing

### Installation

---



*Heavy parts.  
Risk of personal injury.  
This procedure must be done by two persons.*

---



*Potential falling object.  
Risk of personal injury.  
Always wear safety shoes and stand clear from the machine part during installation.*

---



*Pinch point.  
Moving parts can crush or cut.  
Keep hands clear.*

---



*Unexpected cow movement.  
Risk of being crushed or trampled.  
Block the cow traffic.*

---

1. Apply copper grease to the motor housing shaft (3) (see figure 12 on page 5-15).
2. Install the motor housing (1) on the frame (2).
3. Make sure the motor housing has no clearance (A) and tighten the two screws (1) (see figure 13 on page 5-16).
4. Tighten the two screws (1) (see figure 14 on page 5-17).
5. Install the washer (2), the spring washer (3) and the bolt (4).

5.4101.8538.0 B

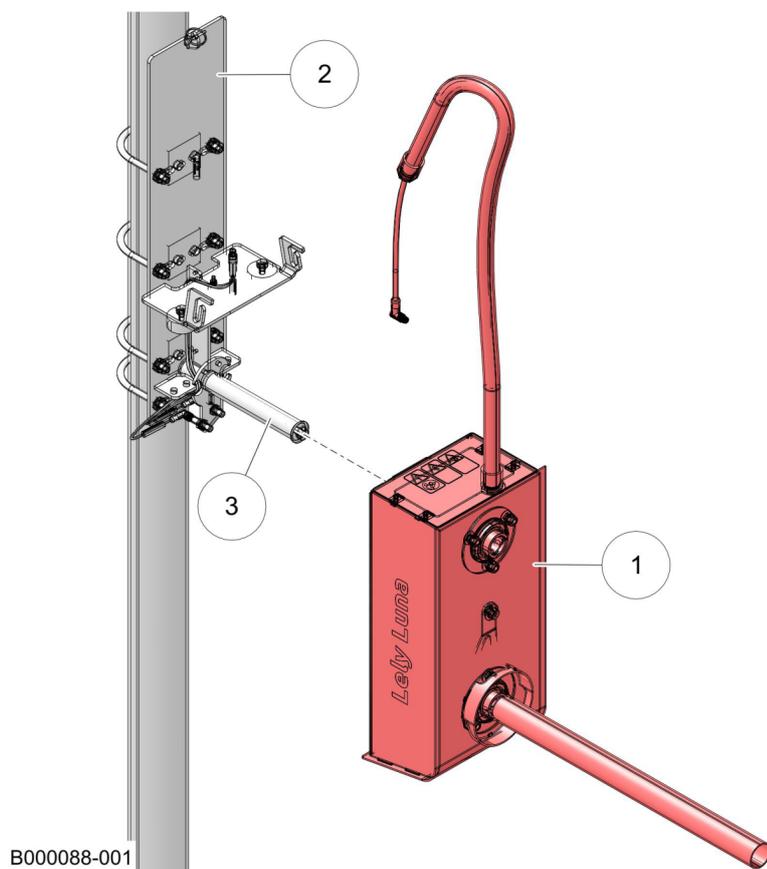
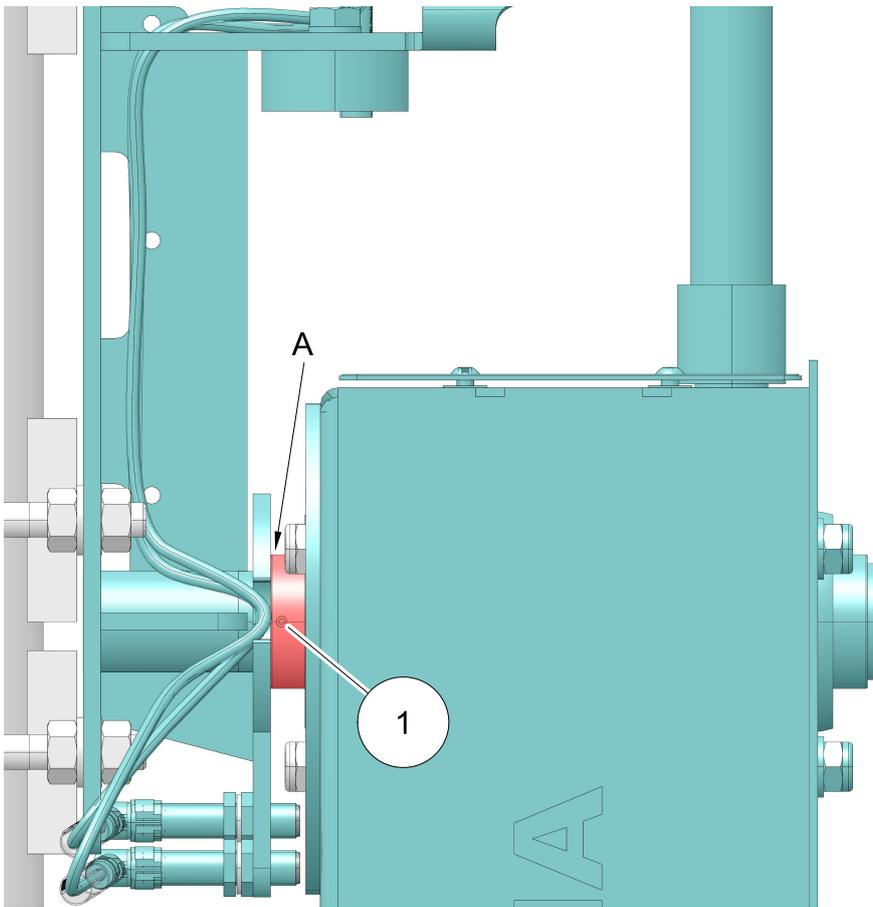


Figure 12. Install the motor housing onto the frame

Item	Qty.	Part no.	Technical data
1	1	5.4101.1500.0	Motor Housing
2	1	5.4101.0266Z0	Frame
3	1		Motor housing shaft



*Figure 13. Make sure the motor housing has no clearance*

KEY: 1. Screw (2x)  
A: 0 mm

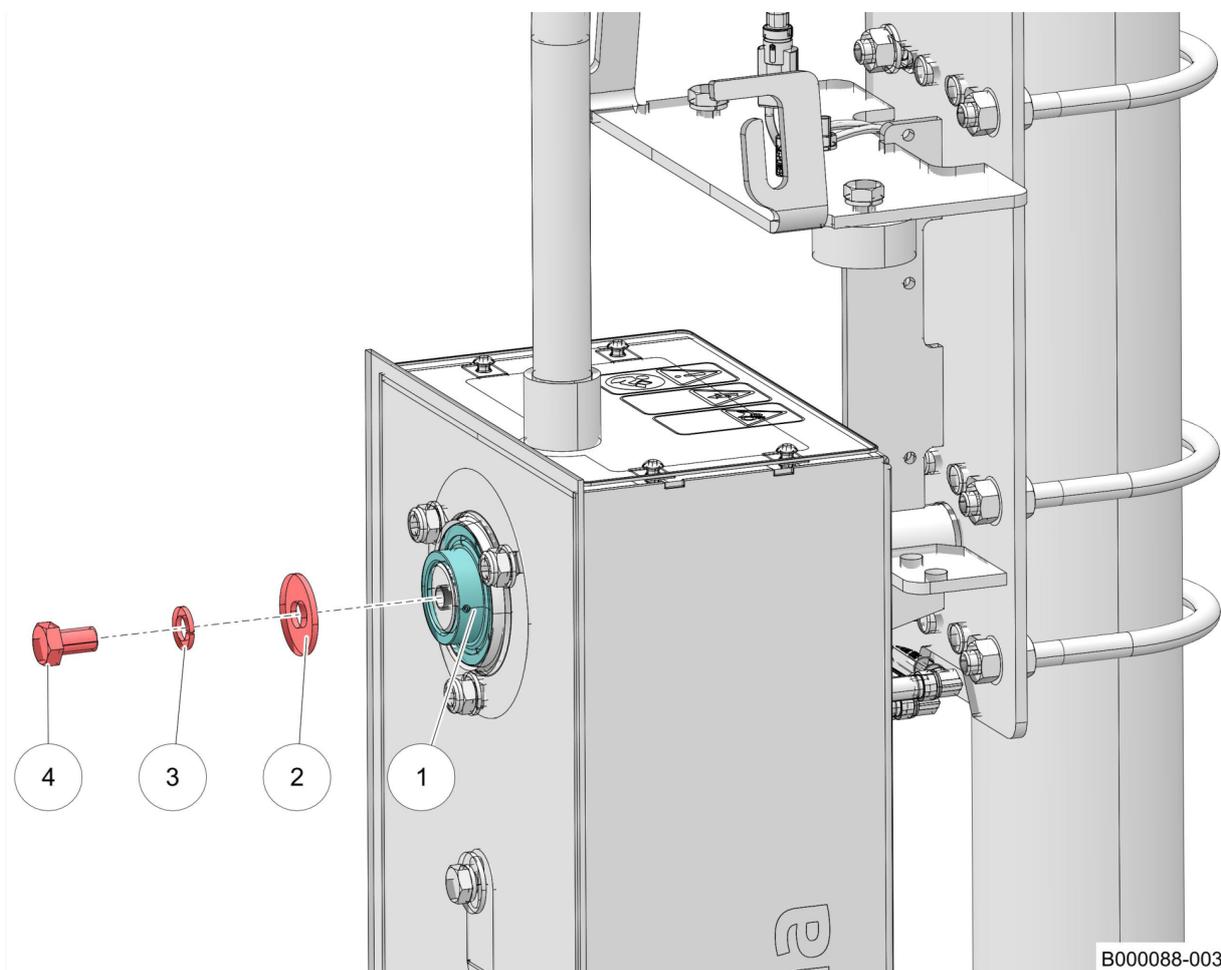


Figure 14. Install the motor housing

Item	Qty.	Part no.	Technical data
1	2		Screw
2	1	9.1048.0041*0	Washer A13 DIN 9021
3	1	9.1121.0011.2	Spring-washer A12 DIN127
4	1	9.1113.0265.5	M12x25 DIN933–8.8

## 5.5 Install the Box

### Special Tools

- M12 Torque tool (5.9000.1148.0).

## Installation



*Unexpected cow movement.  
Risk of being crushed or trampled.  
Block the cow traffic.*



*Pinch point.  
Moving parts can crush or cut.  
Keep hands clear.*

### NOTICE

If you fix the power cable to the wall, make sure there is enough cable length to open the cover.

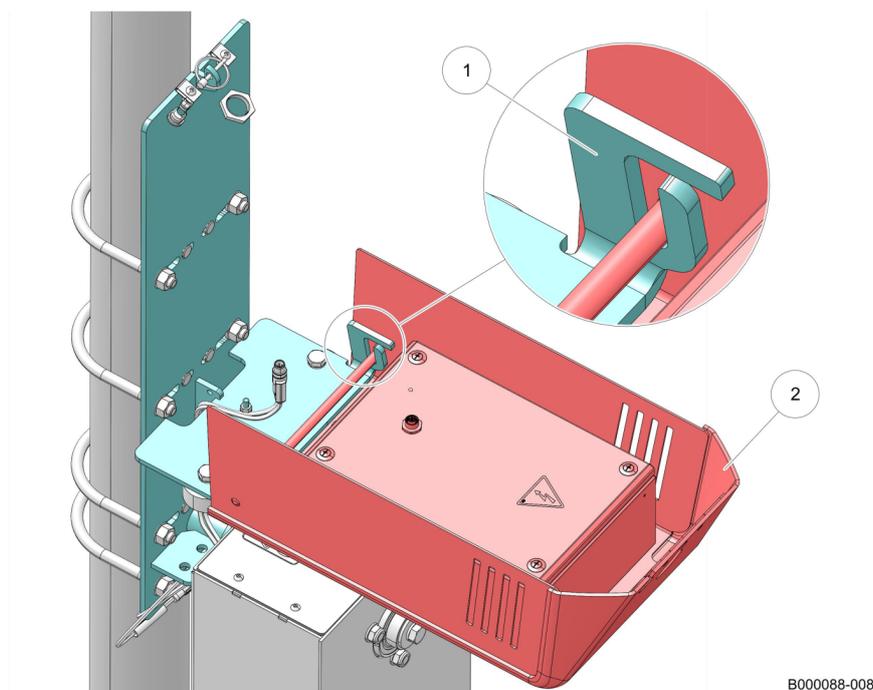
1. Install the box (2) to the frame (1) (see figure 15 on page 5-19).
2. Install the grounding cable (3) with the spring washer (2) and nut (1) to the frame (4) (see figure 16 on page 5-20).
3. Guide the nut (3) over the motor cable (1) (see figure 17 on page 5-21).
4. Apply loctite 5331 to the thread of the cable hose (4).
5. Install the cable hose (4) to the box (2) and tighten the nut (3).
6. Connect the motor cable connector (1) to the box (2).
7. Torque tighten the motor cable connector (1) with the torque tool.
8. Guide the inductive sensor cable connector (2) through the frame (1) (see figure 18 on page 5-22).
9. Connect the inductive sensor cable connector (2) to the box (3).
10. Torque tighten the inductive sensor cable connector (2) with the torque tool.



*In the USA/Canada (115V) the connection of the machine from the junction box to the power network must be made by a certified electrician (see page 5-24).*

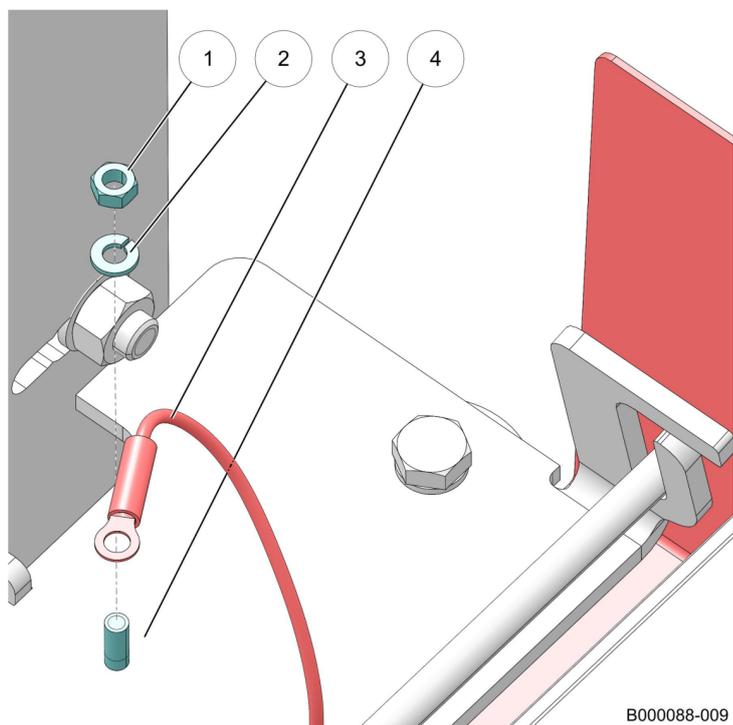
11. Install the power cable (1) with the strain relief (2) (see figure 19 on page 5-23).
12. Squeeze the strain relief with a pipe wrench on the cable.
13. Connect the power cable connector (1) to the box (4).

14. Tighten the power cable connector (1) firmly by hand.
15. Close the box and install the secure clip (1) (see figure 20 on page 5-24).



*Figure 15. Install the box*

KEY: 1. Frame - 2. Box with cover



B000088-009

Figure 16. Install the grounding cable to the frame

Item	Qty.	Part no.	Technical data
1	1	9.1029.0002*1	Nut M6 DIN934-8
2	1	9.1121.0008.6	Spring-washer A6 DIN127
3	1		Grounding cable
4			Frame

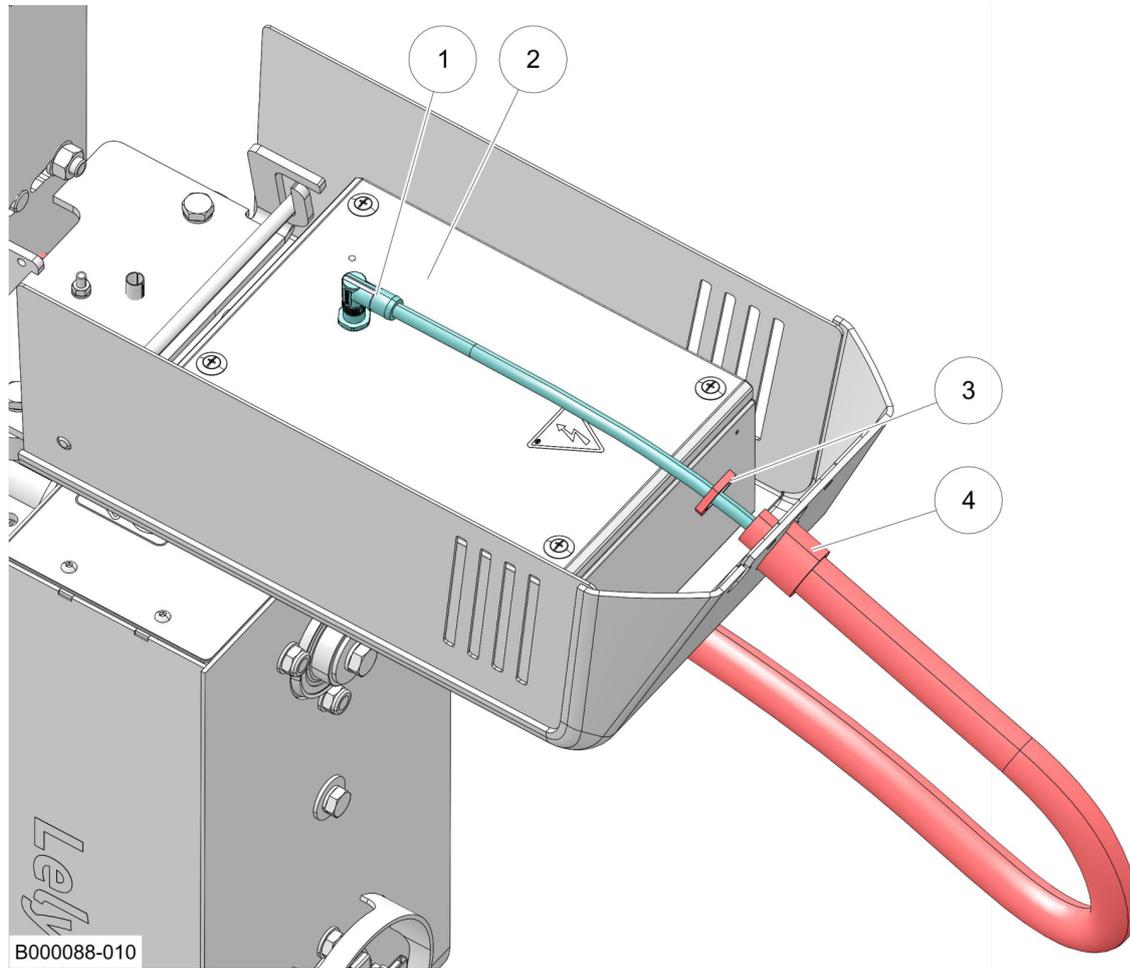


Figure 17. Install the motor cable

KEY: 1. Motor cable connector - 2. Box - 3. Nut - 4. Cable hose

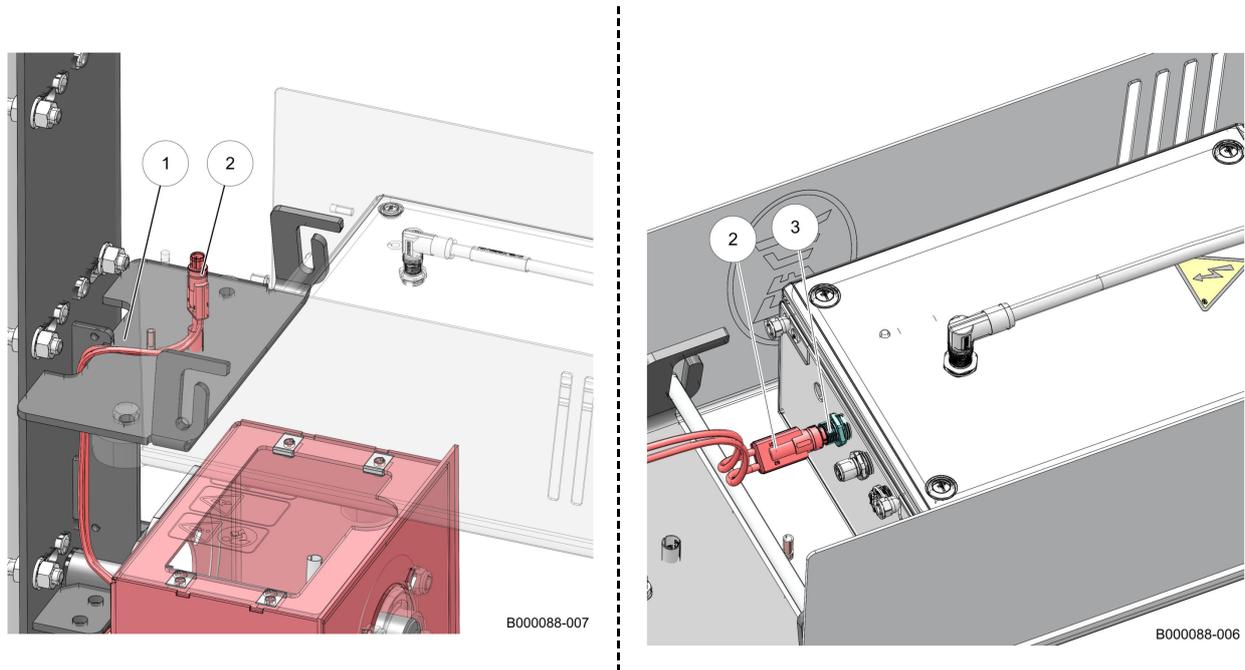
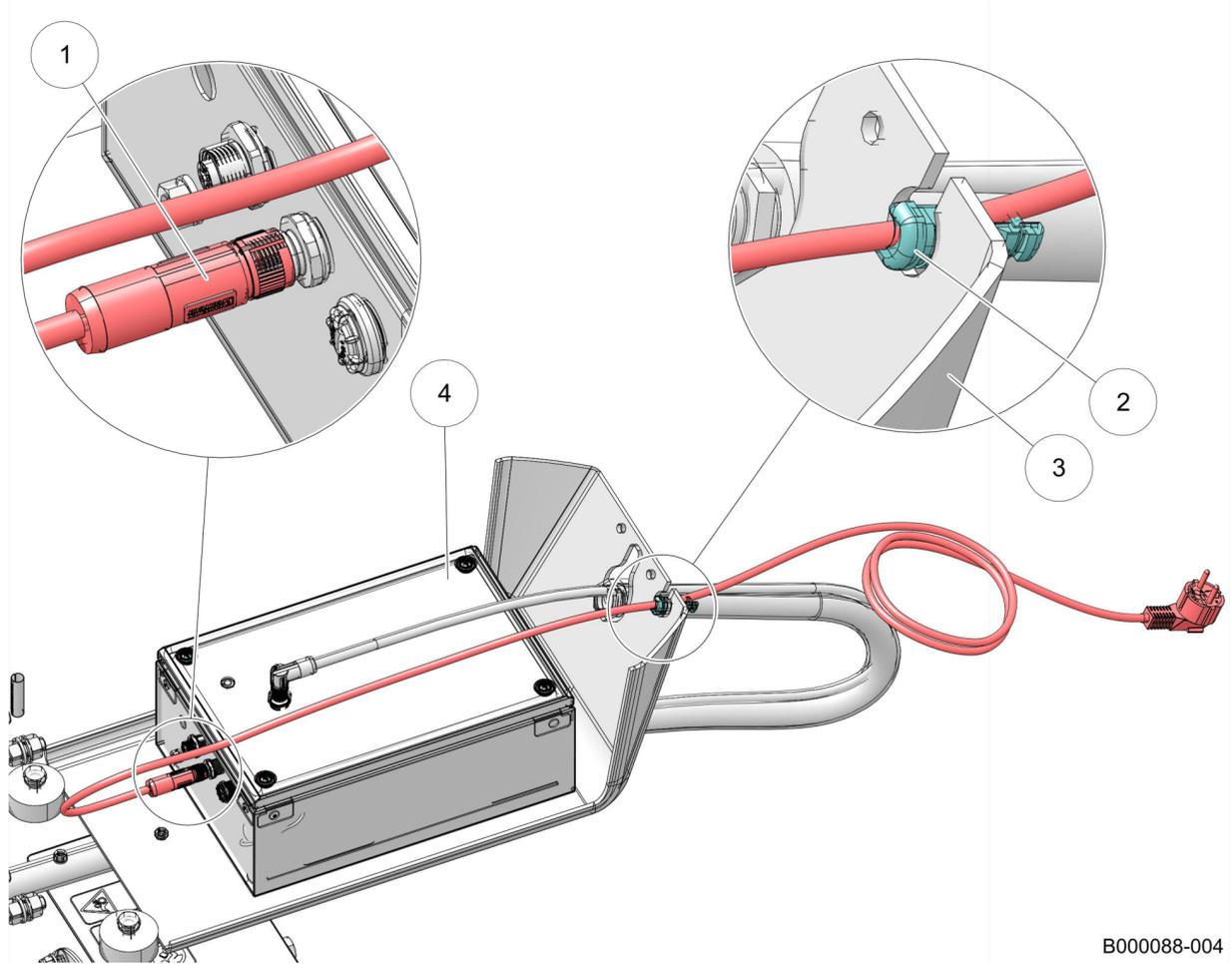


Figure 18. Connect the inductive sensor cable connector to the box

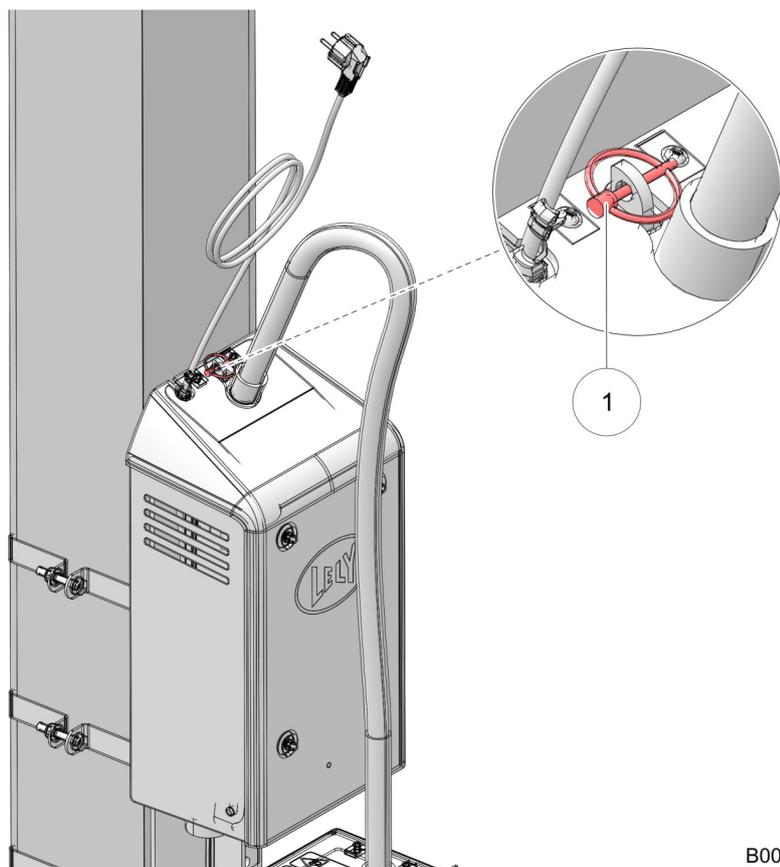
KEY: 1. Frame - 2. Inductive sensor cable connector - 3. Box



B000088-004

Figure 19. Install the power cable (230V version)

KEY: 1. Power cable connector - 2. Strain relief - 3. Cover - 4. Box



B000088-005

5.4101.8538.0 B

Figure 20. Install the secure clip

KEY: 1. Secure clip

## 5.6 Install the Junction Box (USA/Canada 115V)



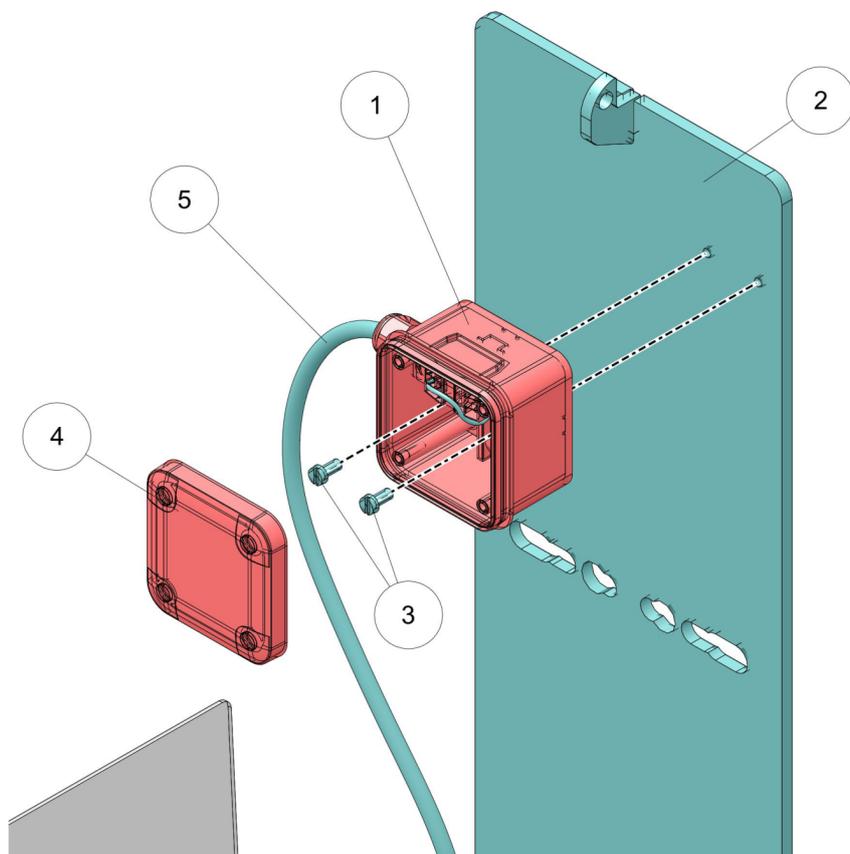
*The connection of the machine to the power network must be made by a certified electrician.*



*The power cable must be installed according to local rules and regulations.*

1. Remove the cover (4) (see figure 21 on page 5-25) from the junction box (1).
2. Install the junction box (1) to the frame with the two bolts (3) (see figure 21 on page 5-25).

3. Close the box and install the secure clip (see figure 20 on page 5-24).



5.4101.8538.0 B

Figure 21. Install the junction box and power cable (115V version)

Item	Qty.	Part no.	Technical data
1	1	5.4101.1590.0a	Junction box
2	1	5.4101.1508.0	Plate
3	2	9.1059.0115.0	Cyl. Head screw M5x10 DIN84 S/S
4	1	5.4101.1590.0b	Cover
5	1		Cable

## 5.7 Install the Brush

### Special Tools

- Torque tool.

## Installation

---



*Unexpected cow movement.  
Risk of being crushed or trampled.  
Block the cow traffic.*

---

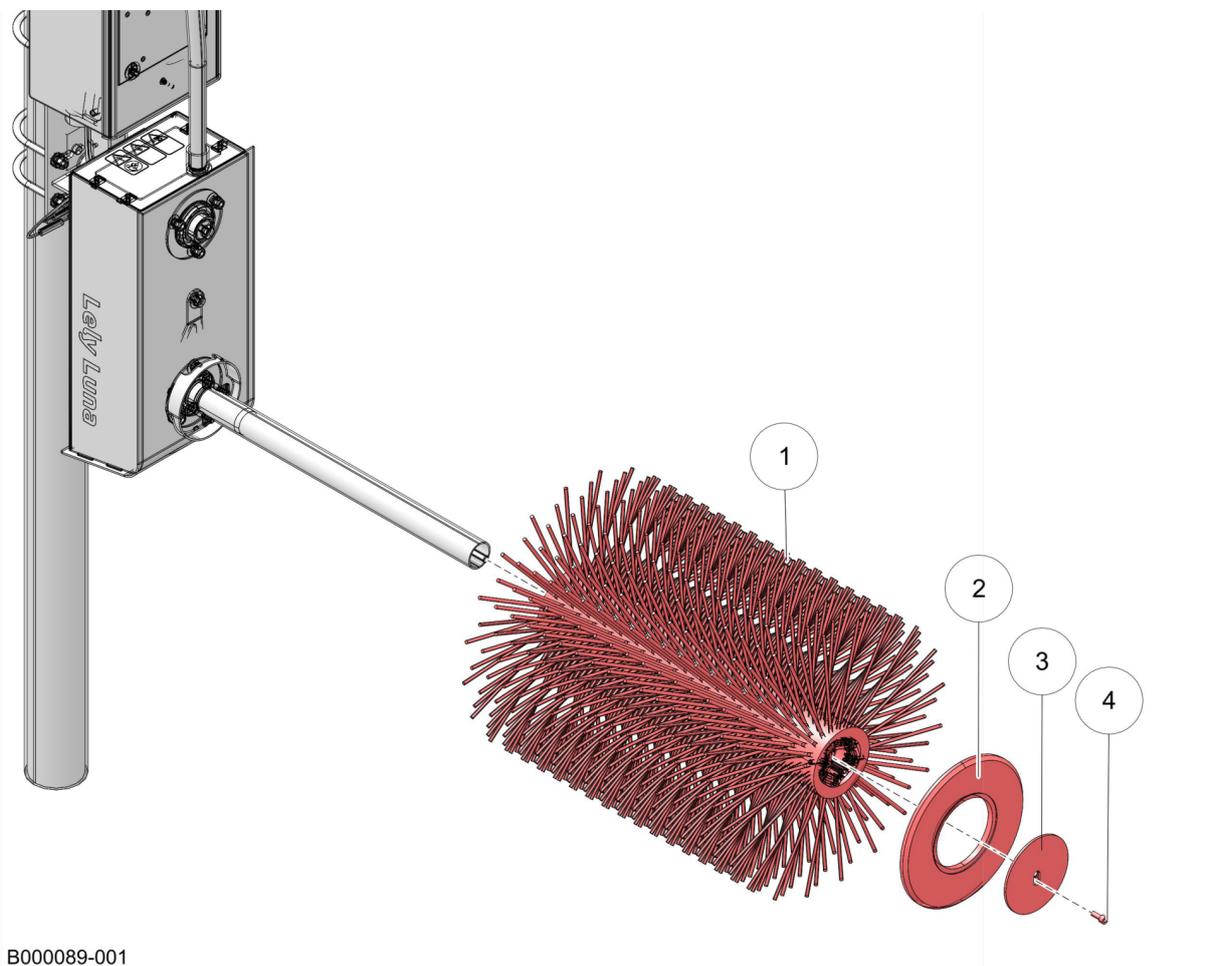


*Pinch point.  
Moving parts can crush or cut.  
Keep hands clear.*

---

1. Install the brush (1) (see figure 22 on page 5-27).
2. Apply loctite 243 to the bolt (4).
3. Install the buffer washer (2), washer (3) and bolt (4).
4. Torque tighten the bolt (4) to  $65 \pm 5$  Nm.

5.4101.8538.0 B



B000089-001

Figure 22. Install the brush

Item	Qty.	Part no.	Technical data
1	1	5.4101.0290.0	Brush
2	1	5.4101.0522.0	Buffer washer
3	1	5.4101.0523.0	Washer
4	1	5.4101.1505.0	Bolt M8x20



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## 6 Operating Instructions

### 6.1 Switch the Luna On or OFF



*Rotating parts.  
Risk of personal injury.  
Rotating parts can crush or cut. Disconnect the machine from the power supply.*

---



*Moving parts.  
Risk of personal injury.  
Moving parts can crush or cut. Disconnect the machine from the power supply and make sure the machine does not move.*

---



*Unexpected cow movement.  
Risk of being crushed or trampled.  
Block the cow traffic.*

---

#### Switch ON

1. Block the cow traffic.
2. Connect the machine to the power supply.
3. Unblock the cow traffic.

#### Switch OFF

1. Block the cow traffic.
2. Disconnect the machine from the power supply.
3. Unblock the cow traffic.



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# 7 Maintenance

## 7.1 Weekly Maintenance

---

**⚠ DANGER**

**Electric shock.  
Risk of severe injury or death.  
Do not use a high pressure cleaner to clean the machine.**

---

**⚠ WARNING**

*Moving parts.  
Risk of personal injury.  
Moving parts can crush or cut. Disconnect the machine from the power supply and make sure the machine does not move.*

---

**⚠ CAUTION**

*Unexpected cow movement.  
Risk of being crushed or trampled.  
Block the cow traffic.*

---

**NOTICE**

Use basic soap or degreaser with a moist cloth to clean the outside of the machine. Do not use other chemicals as the chemicals could damage the sealings inside the machine.

---

- Make sure the brush is clean and free of damage. If necessary:
  - Clean the brush.
  - Or if the diameter of the brush is less than 30 cm (12 in), replace the brush (see Replace the Brush on page 7-2).
- Make sure the ventilation openings of the motor, the motor housing and the electric box are clean (see figure 23 on page 7-2). If necessary:
  - Clean the ventilation openings with water and a soft brush or a moist cloth.
- Examine the gearbox for oil leaks (see Troubleshooting Table on page 9-1).

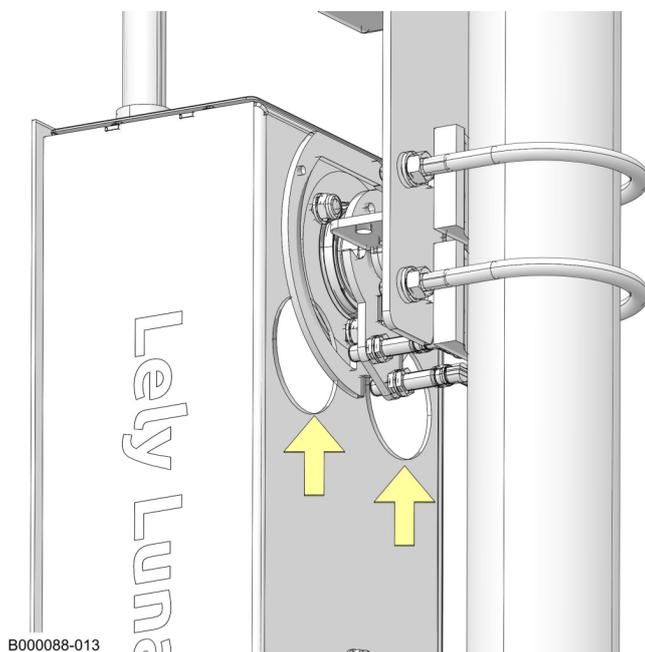


Figure 23. Clean the ventilation openings

## 7.2 Replace the Brush

### Special tools

- Torque tool.

### Preparation



*Unexpected cow movement.  
Risk of being crushed or trampled.  
Block the cow traffic.*

1. Block the cow traffic.
2. Disconnect the machine from the power supply.

### Removal



*Moving parts.  
Risk of personal injury.  
Moving parts can crush or cut. Disconnect the machine from the power supply and make sure the machine does not move.*

1. Remove the bolt (4), washer (3) and buffer washer (2) (see figure 22 on page 5-27).
2. Remove the brush (1).
3. Examine the brush (1). If necessary:
  - Clean the brush with water.
  - Place the worn side of the brush to the motor housing side or
  - Replace the brush.

### **Installation**

1. Install the brush (1).
2. Apply loctite 243 to the bolt (4).
3. Install the buffer washer (2), washer (3) and the bolt (4).
4. Torque tighten the bolt (4) to  $65\pm 5$  Nm.

### **Close-up**

1. Connect the machine to the power supply.
2. Unblock the cow traffic.



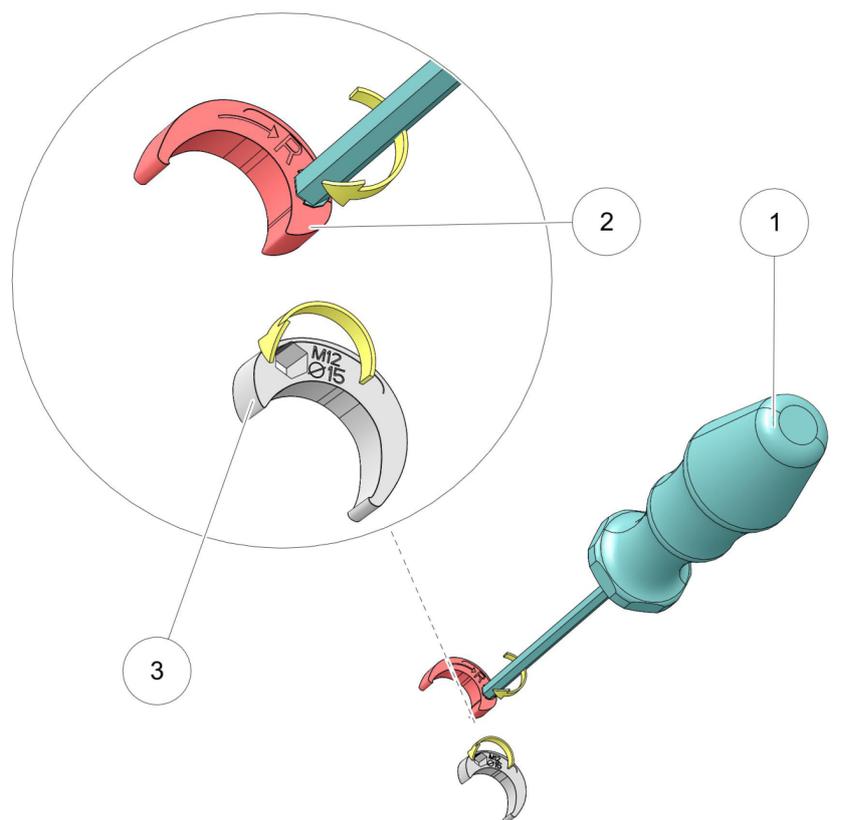
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## 8 M12 Connectors

### 8.1 M12 Torque Tool

The speedcon M12 connectors are installed by hand and then tightened to a defined force with the aid of a torque tool (see figure 24 on page 8-1).



5.4101.8538.0 B

D000538-005

Figure 24. M12 torque tool

KEY: 1. Torque screwdriver - 2. M12 bit (tighten position) - 3. M12 bit (loosen position)

An acoustic signal provides the feedback that the preset torque of 0.4 Nm has been reached.

The M12 bit can be removed from the torque screwdriver (1) and turned to:

- Tighten (position 2).
- Loosen (position 3).

### 8.2 Connect or disconnect the M12 Connectors

#### Special tools

- M12 torque tool.

**NOTICE**

Do not use pliers to tighten or loosen the M12 connectors.

**Connect**

To connect the M12 connectors:

1. Align the markings (1 and 2) of the M12 connector (see figure 25 on page 8-2).

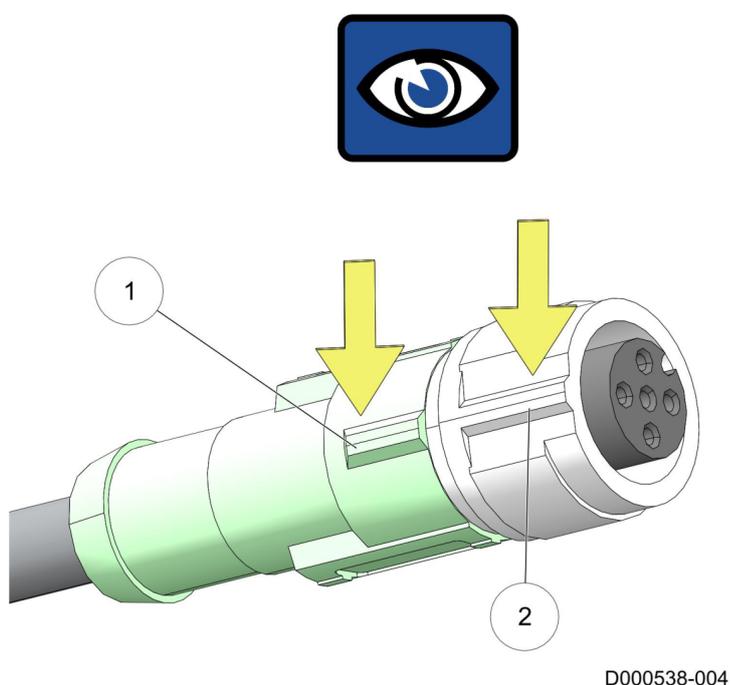


Figure 25. Alignment M12 connector

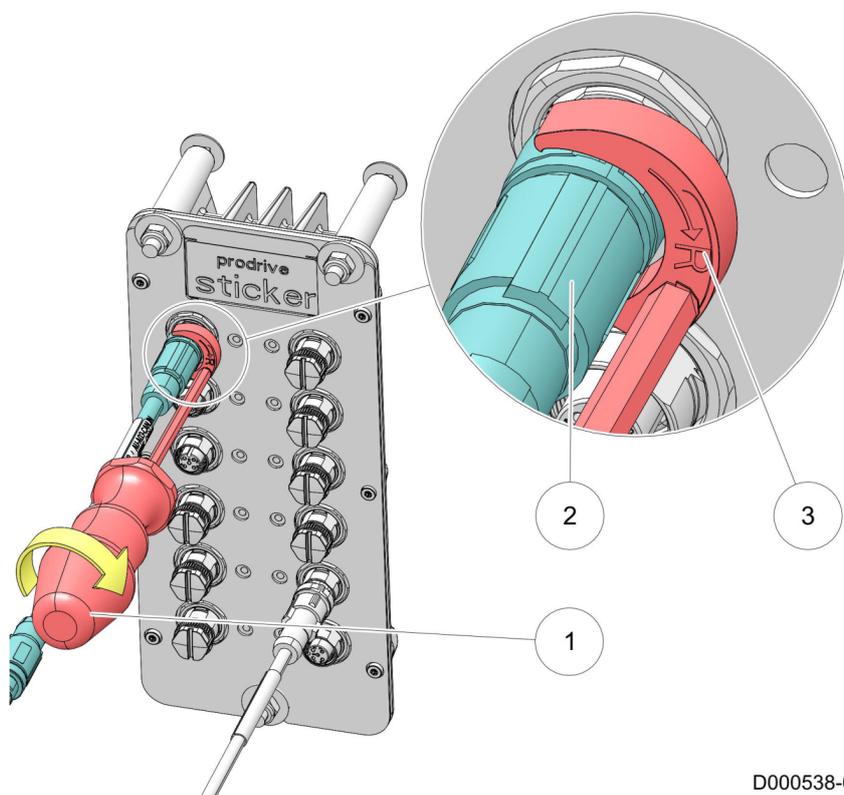
KEY: 1. Mark white or black - 2. Mark

2. Connect the male connector to the female connector.

**NOTICE**

The connectors must be placed straight and without any angle, markings white or black of the male and female connectors must be aligned with the ridge of the connector on the boxes.

- Put the bit (3) of the M12 torque tool on the connector (2) (see figure 26 on page 8-3).



5.4101.8538.0 B

D000538-001

Figure 26. Connect the M12 connector

KEY: 1. Torque screwdriver - 2. Connector - 3. M12 torque bit

- Turn the torque screwdriver clockwise until you hear a clicking sound.
- The M12 connector is now tightened to 0.4 Nm.

### Disconnect

To disconnect the M12 connectors:

- Remove the M12 torque bit from the torque screwdriver (see M12 Torque Tool on page 8-1).
- Turn the M12 torque bit.
- Replace the M12 torque bit on the torque screwdriver.
- Put the bit (3) of the M12 torque tool on the connector (2) (see figure 26 on page 8-3).
- Turn the torque screwdriver counter clockwise to loosen the M12 connector.
- Remove the M12 connector.

## 8.3 Bending Risk M12 Cables



Ensure a sufficient bending radius. This is important because a greater bending radius will better absorb energy that results from cable movement.

In fixed installations (see figure 27 on page 8-4), the minimum bending radius is 5 times the diameter. For flexible/moveable installations (see figure 28 on page 8-5) a minimum of 10 times the diameter is recommended.

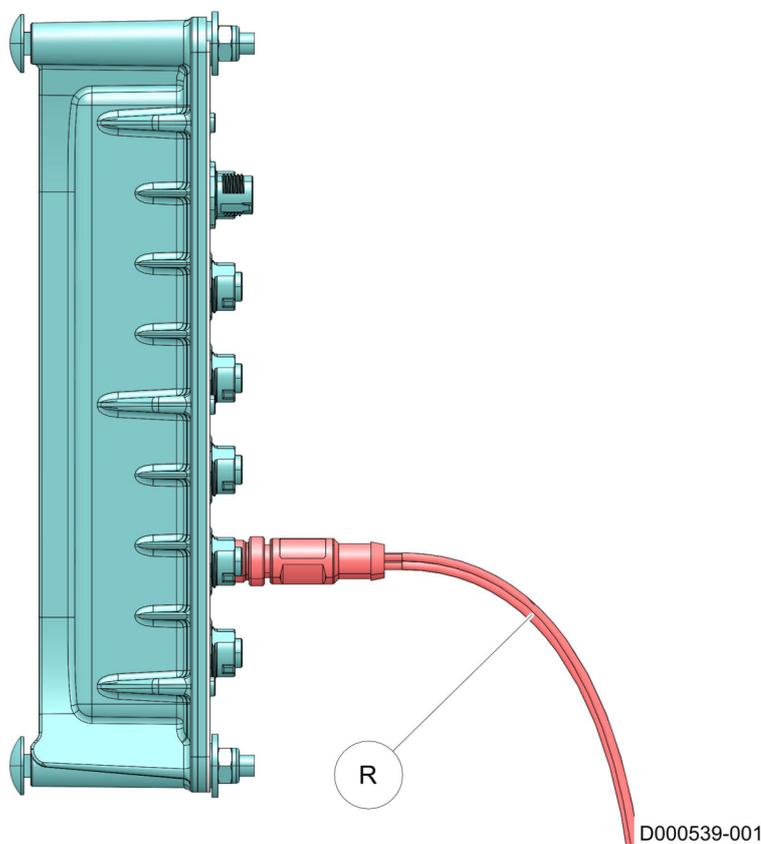
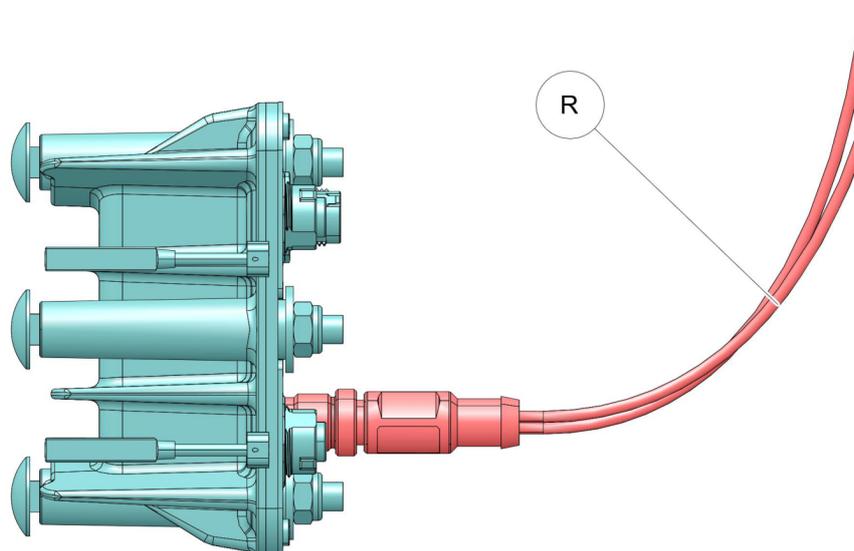


Figure 27. Fixed installations

KEY:  
A: R = Minimum radius



D000539-002

Figure 28. Flexible/moveable installation

KEY: 1. R = Minimum radius

**NOTICE**

A sufficient cable loop at the connection point can prevent the cable jacket and inner conductors from stress and premature wear.

## 8.4 Examine and/or replace the Seal of the female M12 Connector

**NOTICE**

The seal of the female M12 connector must be clean to guarantee the IP65 class.

**Examine**

1. Disconnect the M12 connector (see Connect or disconnect the M12 Connectors on page 8-1).

2. Visually inspect the seal (1) (see figure 29 on page 8-6) on wear and tear.

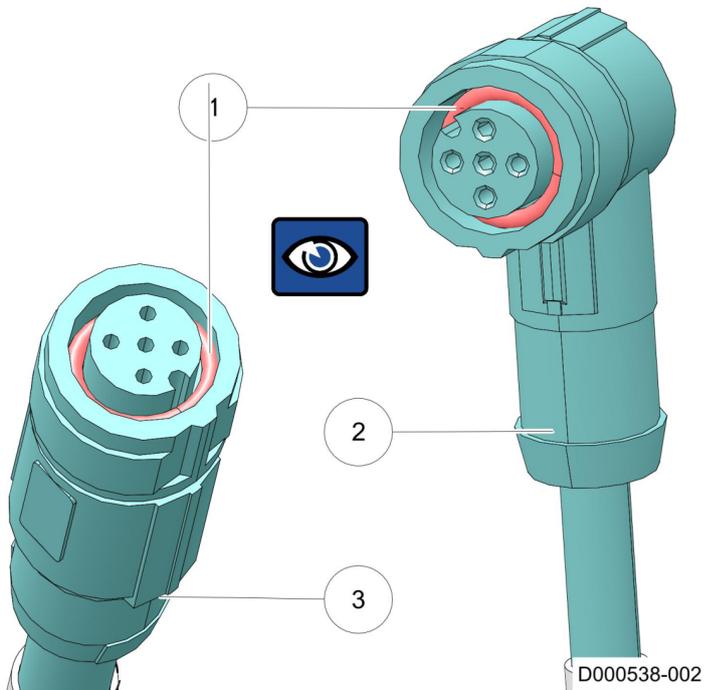


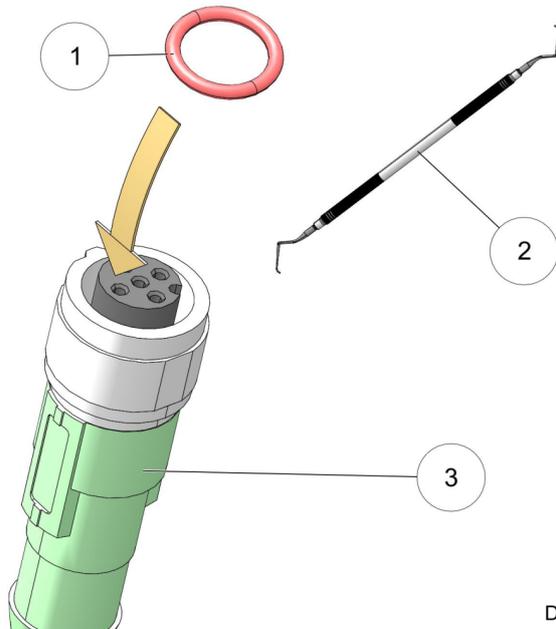
Figure 29. M12 connectors

KEY: 1. Seal - 2. M12 connector angled - 3. M12 connector straight

3. Examine and remove dust from the M12 connector .

## Replacement

1. Use an O-ring picker (2) (see figure 30 on page 8-7) to remove the seal (1).



D000538-003

Figure 30. Replace M12 seal

KEY: 1. Seal - 2. O-ring picker - 3. M12 connector

2. Place a new seal in the M12 connector.

## Close up

1. Connect the M12 connector (see Connect or disconnect the M12 Connectors on page 8-1).



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## 9 Troubleshooting

### 9.1 Troubleshooting Table

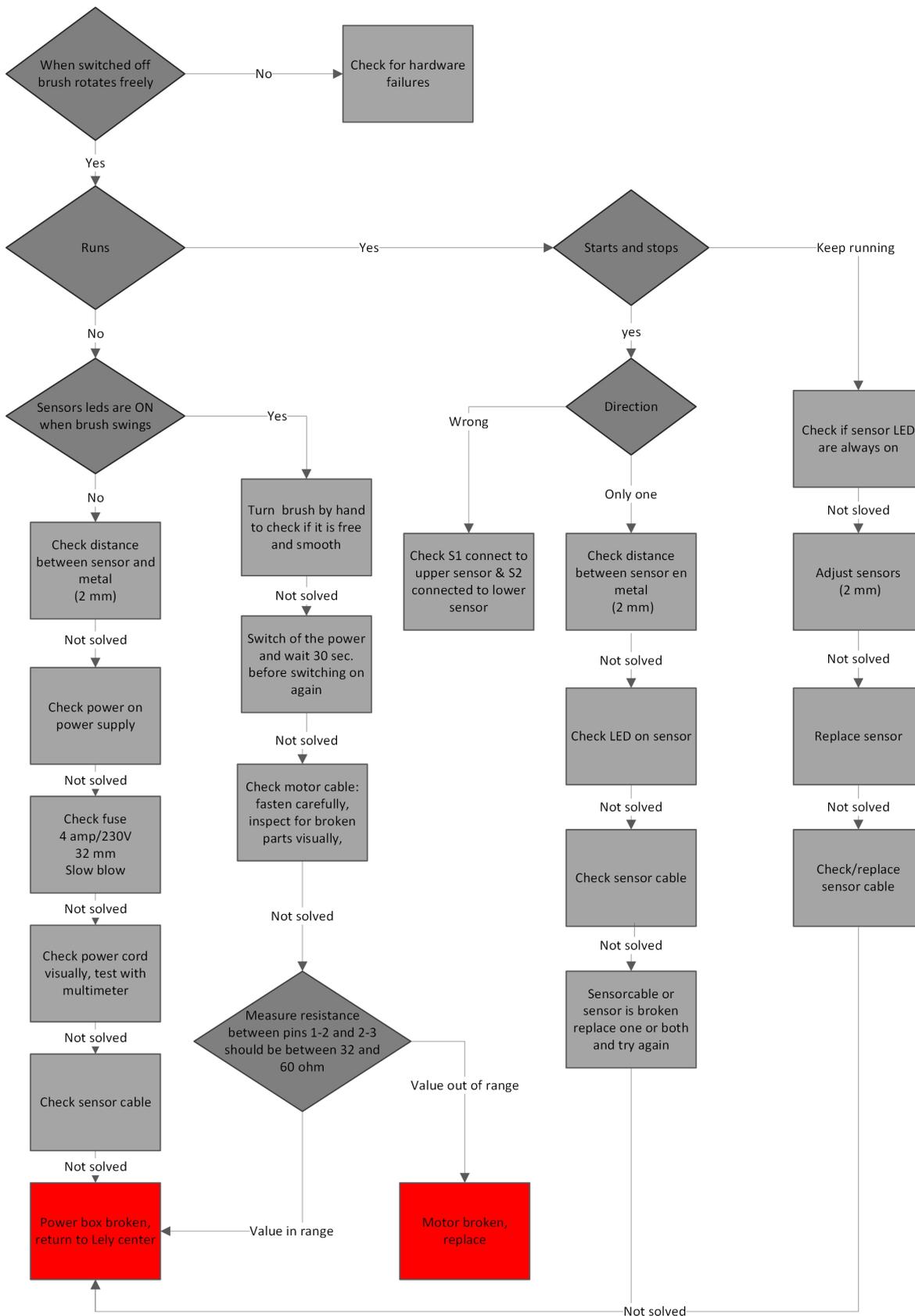
Symptom	Possible cause	Action
The machine does not start to operate when the motor house is deflected.	<ul style="list-style-type: none"> <li>The power cable is not connected to the main electrical supply.</li> </ul>	<ul style="list-style-type: none"> <li>Connect the power cable to the main electrical supply.</li> </ul>
	<ul style="list-style-type: none"> <li>There is no electricity from the main electrical supply.</li> </ul>	<ul style="list-style-type: none"> <li>Make sure there is power on the main electrical supply.</li> </ul>
	<ul style="list-style-type: none"> <li>The motor has overheated (thermal cut-out).</li> <li>The motor cable is not connected to the control box or the motor.</li> <li>One of the sensors is broken or loose.</li> <li>Inverter error.</li> </ul>	<ul style="list-style-type: none"> <li>Wait until the motor has cooled down.</li> <li>Disconnect the power cable from the main wall socket, wait for a few seconds and reconnect.</li> <li>Replace or fasten the motor cable.</li> <li>Replace or fasten the sensor.</li> <li>If the problem remains, call your local Lely service provider.</li> </ul>
The brush does not switch direction.		<ul style="list-style-type: none"> <li>Examine LED activation lights on sensor</li> <li>Disconnect the power cable from the main wall socket wait a few seconds and reconnect.</li> <li>If the problem remains, call your local Lely service provider.</li> </ul>
The brush does not stop.	<ul style="list-style-type: none"> <li>The controller does not switch to standby.</li> <li>One of the sensors is broken or loose.</li> </ul>	<ul style="list-style-type: none"> <li>Examine LED activation lights on the sensors.</li> <li>Disconnect the power cable from the main wall socket, wait a few seconds and reconnect.</li> <li>If needed fasten the sensor at 2 mm distance from motor house ring.</li> </ul>

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Symptom	Possible cause	Action
		<ul style="list-style-type: none"> <li>If the problem remains, call your local Lely service provider.</li> </ul>
The machine makes an unusual noise.		<ul style="list-style-type: none"> <li>Disconnect the power cable from the main electrical supply.</li> <li>Call your local Lely service provider.</li> </ul>
Brush runs over the back of the cow and turns away. Brush stops frequently.	<ul style="list-style-type: none"> <li>Motor is installed in the wrong way or sensors are switched around.</li> <li>Motor is running in the wrong direction.</li> </ul>	<ul style="list-style-type: none"> <li>Switch the inductive sensors cables.</li> <li>If the problem remains, call your local Lely service provider.</li> </ul>
Gearbox leaks oil.		<ul style="list-style-type: none"> <li>Call your local Lely service provider.</li> </ul>

## 9.2 Troubleshooting Flowchart

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# 10 Diagrams

## 10.1 Dimensions

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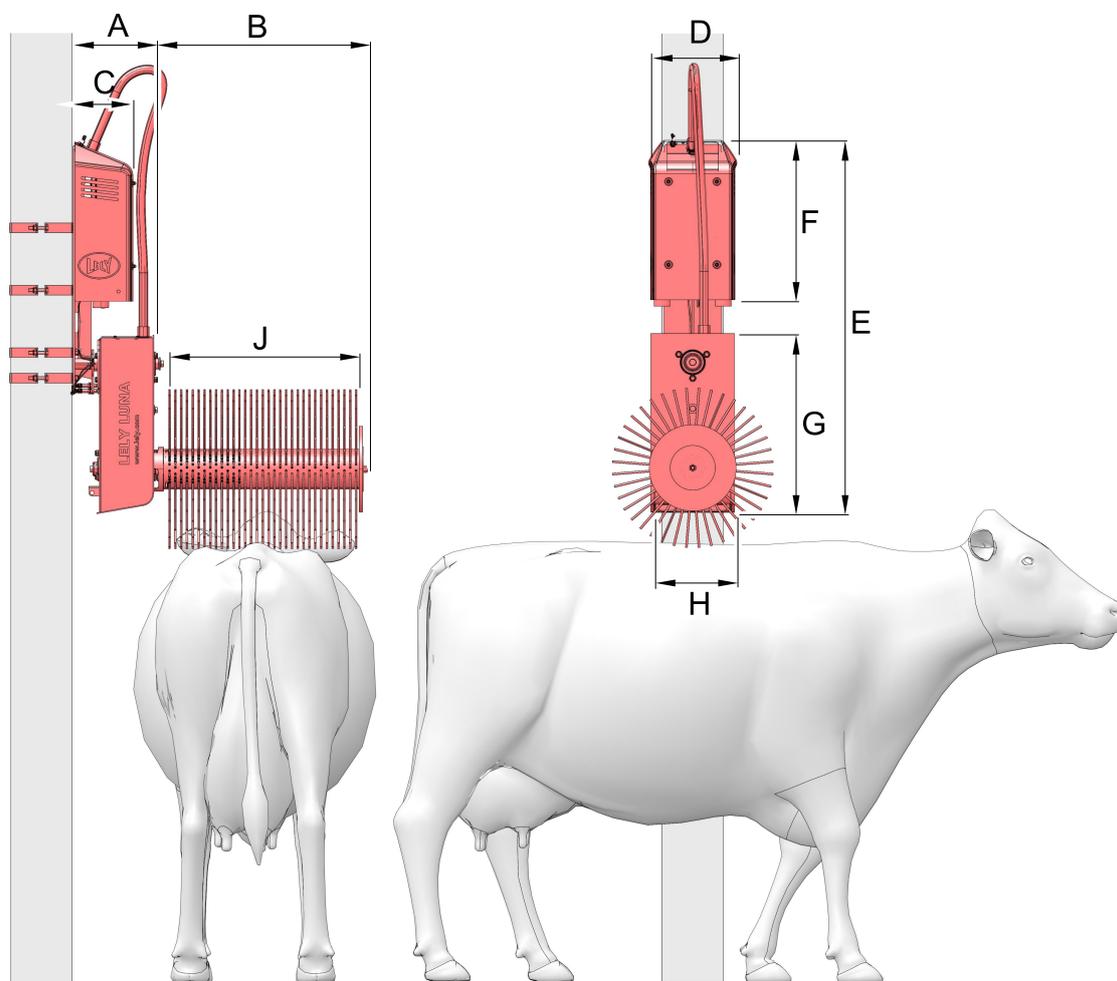


Figure 31. Dimensions

**KEY:**

- A: 25.1 cm (9.88 in)
- B: 66.3 cm (26.10 in)
- C: 18.6 cm (7.32 in)
- D: 17.4 cm (6.85 in)
- E: 116.5 cm (45.87 in)
- F: 50 cm (19.68 in)
- G: 56 cm (22.05 in)
- H: 24 cm (9.45 in)
- I: –
- J: 60 cm (23.62 in)



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## 11 Disposal

Disposing this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Decommissioning and disassembly of the product can be dangerous and must be done only by qualified recycling organizations. All components must be disposed in compliance with the local rules and regulations.

Lubricants and fluids must be disposed correctly to prevent pollution of the environment. Read the safety data sheets of the used lubricants and fluids for correct disposal. All lubricants and fluids must be disposed in compliance with the local rules and regulations.

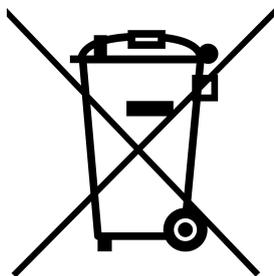
Contact your local authority or local Lely service provider for further details.



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## 12 WEEE



This symbol [crossed-out wheel bin WEEE Annex IV] indicates separate collection of electrical waste and electronic equipment in the European countries. We are committed to being a good corporate citizen. As part of that commitment, we strive to maintain an environmentally conscious manufacturing operation

In accordance with the European Union WEEE (Waste Electrical and Electronic Equipment) Directive 2012/19/EC, we would like to notify you that this product might contain regulated materials, which upon disposal, according to the WEEE directive, require special reuse and recycling processing.

For this reason, Lely Industries N.V. has arranged that this product can be recycled at the local recycling/disposal companies to collect and recycle this product at no cost to you.

Additional local legislation may apply.

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### NOTICE

Please note, only this product itself falls under the WEEE Directive. When disposing of packaging and other related shipping materials we encourage you to recycle these items through the normal channels.

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# 13 EC Declaration of Conformity

EC DECLARATION OF CONFORMITY  
 EG-KONFORMITÄTSEKTLÄRUNG  
 DÉCLARATION DE CONFORMITÉ AUX NORMES DE LA CE  
 DICHIARAZIONE CE DI CONFORMITÀ  
 CERTIFICADO DE CONFORMIDAD CEE  
 DECLARAÇÃO DE CONFORMIDADE CE  
 DEKLARASJON EU MASKINDIREKTIV  
 VAATIMUSTENMUKAISUUSVAKUUTUS  
 EU-KONFORMITETSEKTLÆRING  
 EG-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE  
 CB - SAMRÆMISYFJRLÝSING



ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ Ε.Ε.  
 DECLARATIE DE CONFORMITATE CE  
 EU MEGFELELŐSÉGI NYILATKOZAT  
 ES-PROHLÁŠENÍ O SHODĚ  
 DEKLARACJA ZGODNOŚCI WE  
 ES - PREHLÁSENIE O ZHODE  
 VASTAVUS EU DIREKTIVIDELE  
 ES ATITIKTIES DEKLARACIJA  
 ЗАЯВЛЕНИЕ О СООТВЕТСТВИИ НОРМАМ ЕС  
 EG - POTVRDA O SUKLADNOSTI  
 ES IZJAVA O SKLADNOSTI

## Wij fabrikant

We manufacturer  
 Der Hersteller  
 Nous, soussignés, le fabricant  
 fabbricante  
 fabricante  
 producent  
 valmistaja  
 produsenten  
 tilverkare  
 framleiðandi

**Lely Industries N.V.**  
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Εμείς, ο κατασκευαστής,  
 fabricant  
 gyártó  
 výrobce  
 producent  
 výrobca  
 tootja  
 gamintojas  
 производитель  
 proizvođač  
 naziv proizvajalca

**verklaren geheel onder eigen verantwoordelijkheid dat de machine:**  
 herewith declare, on our own responsibility, that the machinery:  
 erkläre hiermit eigenverantwortlich, dass die Maschine:  
 déclarons que les machines désignées ci-après :

## productbeschrijving

description of product  
 Produktbezeichnung  
 description du produit  
 descrizione del prodotto  
 nombre del producto  
 designação de produto  
 produktnavn  
 tuotenimi  
 produktnavn  
 produktnamn  
 vörulýsing

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περιγραφή του προϊόντος  
 descrierea produsului  
 termék megnevezése  
 označení produktu  
 opis produktu  
 označenie výrobku  
 toote kirjeldus  
 gaminio aprašymas  
 наименование изделия  
 naziv proizvoda

## typenummer

model number  
 Typnummer  
 numéro de modèle  
 numero di modello  
 modelo  
 número do modelo  
 modelnummer  
 mallinnumero  
 modellnummer  
 gerðarnúmer

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αριθμός μοντέλου  
 numărul modelului  
 típus száma  
 numer modelu  
 typové číslo  
 túbü number  
 modelo numeris  
 номер модели  
 broj modela  
 številka artikla

## waarop deze verklaring betrekking heeft, in overeenstemming is met de bepalingen van de volgende Richtlijn(en):

which this declaration refers to, is in accordance with the conditions of the following Directive(s):  
 worauf sich diese Erklärung bezieht, hergestellt ist gemäß den Bestimmungen der Richtlinie(n):

auxquelles la présente déclaration se rapporte, sont conformes aux dispositions de la ou des directives suivantes :

è conforme alle direttive  
 de acuerdo con las directivas  
 de acordo com a directiva  
 opfylder følgende direktiver  
 täyttää seuraavien direktivien vaatimukset  
 oppfyller følgende direktiver  
 uppfyller följande direktiv  
 uppfyllir eftirfarandi tilskipanir

Machinery directive 2006/42/EC

conform cu directivele  
 rendelkezőseknek megfelelően  
 podle směrnice  
 zgodny z dyrektywą  
 vzhode so smernicami  
 direktivide järgi  
 pagal direktyvas  
 соотвѣтствует требованиям директив  
 po smjernicama  
 v skladu z direktivo

## en in overeenstemming is met de volgende normen of andere normatieve documenten :

and is in conformity with the following standard(s) or other such specifications :

und den folgenden Normen oder vergleichbaren Spezifikationen entspricht:

et aux normes et autres spécifications suivantes :

è conforme alle norme  
 de acuerdo con las normas  
 de acordo com as normas  
 opfylder følgende standarder  
 täyttää seuraavien standardien vaatimukset  
 oppfyller følgende standard  
 uppfyller följande standarder  
 uppfyllir eftirfarandi staðla  
 ηλποοί τος η ποδιογροφες

EN-ISO 12100:2010  
 EN 60204-1:2006/A1:2009  
 EN 61000-6-1:2007  
 EN-IEC 61000-6-3+A1:2011

în conformitate cu standardele  
 megfelel a szabványoknak  
 odpovídá normám  
 zgodny z normą  
 zodpovedá normám  
 normidele vastavus  
 atitinka standartus  
 соотвѣтствует стандартам нормам  
 u skladu sa standardima  
 v skladu s standardi

## handtekening en datum

signature and date  
 Unterschrift und Datum  
 signature et date  
 firma e data  
 firma y fecha  
 assinatura e data  
 underskrift og dato  
 allekirjoitus ja päiväs  
 signatur og dato  
 underskrift och datum  
 undirskrift og dagsetning

S. Loosveld  
 Director Product Development  
 Lely Industries N.V.

J.W. Rodenburg  
 Manager Product Safety & Compliance  
 Lely Industries N.V.

υπογραφή και ημερομηνία  
 semnătura și data  
 aláírás és dátum  
 podpis a datum  
 podpis i data  
 podpis a dátum  
 allkirj ja kuupäev  
 parašas ir data  
 подпись и дата  
 potpis i datum  
 potpis in datum

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